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OCCUPATIONS

REVISED BY

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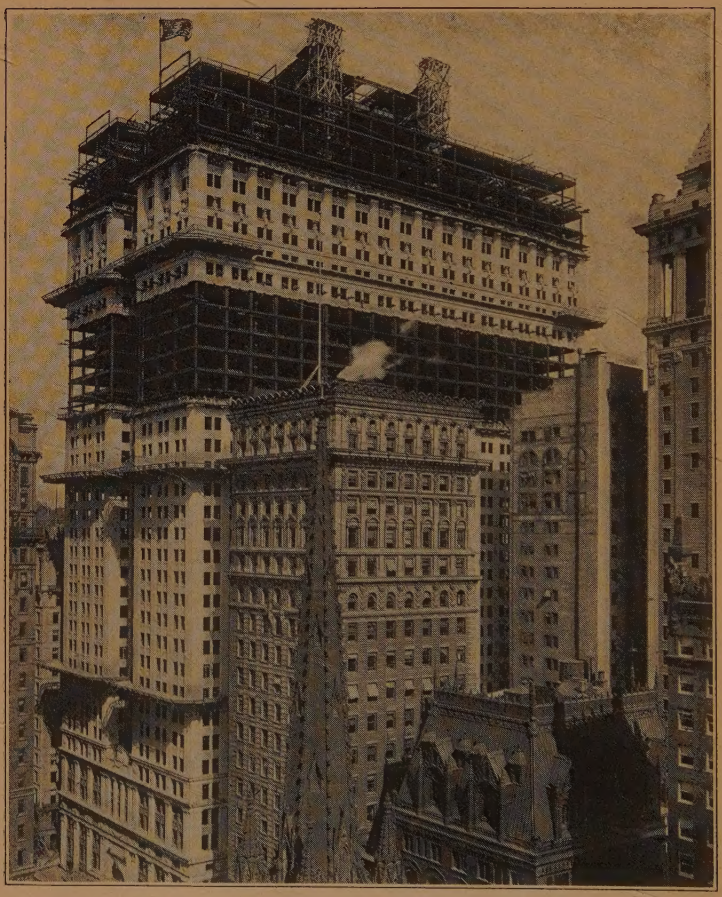

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OCCUPATIONS

A TEXTBOOK FOR THE EDUCATIONAL, CIVIC, AND VOCATIONAL GUIDANCE OF BOYS AND GIRLS

BY

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REVISED EDITION

McKinley Junior High School Library

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PREFACE

The subject matter of this book is one of the social sciences (the table of contents will indicate this clearly). As such it should have a regular place in the curriculum. Fifteen years of experimentation with the class in occupations have revealed the need for this work. The incidental teaching of occupations in English or other classes has sometimes succeeded, but at best has been found a makeshift. Lectures by successful workers are occasionally helpful, provided these speakers are acquainted with children and know how to present their subjects. For regular work, however, a good teacher with a textbook can do very much better, just as in geography, mathematics, or Latin.

The first edition of this textbook, a pioneer in its field, for several years has had an increasing use among high schools. The present revised edition aims to retain the features which have proved best in the first edition, and includes the following improvements:

1. It is designed for girls as well as for boys.

2. It conforms to the declaration of the National Vocational Guidance Association that "occupations should be chosen with service to society as the basic consideration, and with personal satisfaction and remuneration as important secondary considerations."

3. Part I, Chapter XVIII of Part II, and most of Part III are new. The remaining chapters have been carefully revised and brought abreast of present needs.

Classes in occupations aid greatly the work of vocational counselors in schools, since individual problems are revealed through class discussions. Vocational education too is fortified by such a study, for it enables boys and girls in trade,

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commercial, agricultural, and professional curriculums to base their enrollment on a wide knowledge of occupations instead of upon mere guesswork.

Since the study of occupations is one of the social studies, it should be taught much as one would teach history, geography, or community civics. Assignments should be made carefully, with full time allowed for necessary questions and discussion. Exercises should, as far as practicable, be assigned to suit individual needs and interests; they may frequently be selected by the student. An occasional compact written quiz at the beginning of the hour will check up on the study of the text assignment.

As a rule the text material should be discussed with the books open. The discussion may be based on such questions as the following: Is this statement true? How do you know? Can you illustrate this truth? How can we find out? What questions does it suggest? Is this information important to us? What are the most important statements? Is anything here worth memorizing? How can we use the points developed? Who does make use of them? How can each of us apply this information to his educational and vocational plans?

Classroom disagreements should not be shunned: they may be used to encourage the search for bases of common understandings such as the vocational world sadly needs.

While the method should be varied to suit the interests of members of the class, demonstrations, socialized recitations, the parliamentary form of class organization, interviews, dramatic methods, occasional addresses by representatives of different vocations, will frequently be found effective. But there is, of course, no substitute for good, hard study and for honest work on reports and other problems and exercises.

No teacher or counselor need have encyclopedic knowledge of occupations, any more than a lawyer needs to know all the law. Frank discussion with the pupils to find out

the facts will accomplish much, for it will replace the present haphazard kinds of guidance, which are usually of little value and often erroneous.

Moreover, the reason for having classes in occupations in high schools is to present to students a body of important problems with which they will deal all their lives,—not to drill on information or to store up facts. Teachers will be content if a student, in dealing with his vocational problems, learns to have clearly in mind the following points: This is a serious problem; it requires careful study; I must proceed to get the facts; I know how to get these facts; I must study alternatives; I must solve my problem on the basis of careful study. Vocational wisdom is of more importance than vocational information.

We have included appropriate references throughout the book and a special list of references at the end. This list gives some of the articles which have been written on the conduct of the class in occupations.

It is a pleasure to acknowledge our indebtedness to Mr. Frederick J. Allen, Research Associate of the Bureau of Vocational Guidance, Harvard University, who has read and criticized the manuscript of the present book. Numerous courtesies have been extended; these are noted throughout the text. We wish also to thank the many teachers who suggested improvements based on their use of the first edition.

The work of preparing the present edition of this book was intrusted to Mr. Brewer, who is responsible for the new portions of the text and for the changes above noted.

THE AUTHORS

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OCCUPATIONS

PART I. EDUCATION AND WORK

CHAPTER I

WHY WE HAVE SCHOOLS AND OTHER OCCUPATIONS

School is your occupation. Many times you have looked forward to holding a job and going to work every day just as your father and other people do. But have you ever stopped to think of the fact that you have a job now? You surely have, for the school is your place of work, five or six hours a day, five days a week, and perhaps forty weeks a year. Your job is going to school.

Most people like their work and go to it every morning willingly. Of course everybody welcomes a holiday, but after every vacation "it's good to get back to work again." How do you feel about your occupation? Is it interesting, so that you like to work hard at it? It is true that there are some drawbacks to your work of being a student, just as there are advantages and disadvantages in being a grocer, nurse, electrician, dentist, or teacher. In any work you undertake you will have to work hard to succeed, and you will need patience, perseverance, and other good qualities to secure promotion. School is like all the rest.

All things considered, your work now is very much like your father's or uncle's job—far more so than you think.

What schools are for. "Yes," you say, "my job is being a student, but what is the value of it all? Is it true that this occupation is an important and valuable one for me?" Of

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course we teachers believe it is, and we think we can easily prove it to you. The reason so many boys and girls drop out of school, thinking that education is of no great importance to them, is because they have always seen the disadvantages of their school job and have never really studied the advantages. We won't argue the advantages here, but we shall give you the facts throughout this whole book and

ACTIVITIES

ATTITUDES	1 School Life	2 Home Membership	3 Citizenship	4 Vocation	5 Leisure and Recreation	6 Care of the Person	7 Religious Life	8 Other Relationships
			← 1. Ethical →					
			← 2. Thoughtful →					
			← 3. Cooperative →					
			← 4. Healthful →					
			← 5. Cultural →					

THE ACTIVITIES AND ATTITUDES OF LIFE

then let you do your own judging. Let us first, however, see whether we can find out why the public maintains schools at all, and what relation your present job has to life.

The real purpose of the school is to enable you to live better. This means that the most important study of all is the study of life, and that geography, algebra, Latin, history, manual training, science, and the rest are all for the purpose of learning how to live. Life is composed of a number of activities and attitudes. Look at the diagram and see the different activities in which one can spend his time. You will notice that according to this plan life is analyzed into eight activities and five attitudes. The attitudes we show in

our life are not activities in which we engage, but are motives with which we carry on these activities. Let us consider a few instances. In school life we must be coöperative: we cannot open the window or use the dictionary without considering other people. Home membership also, in order to be successful, must be coöperative. Citizenship too is a cooperative affair, and so on through the other activities. All activities must be ethical and thoughtful and all of them should be cultural; for example, the way we dress, the care of the person, and the way we laugh and play.

But what has this analysis to do with schools or school subjects? A great deal, certainly. The studies of the school are intimately related to these activities and attitudes. For instance, mathematics is concerned largely with vocational life; home economics, with home membership; civics and geography, with citizenship; poetry, with leisure and with the development of a cultural attitude in all phases of life; hygiene, with the care of the person. We busy ourselves with each of the school studies in order that we may be enabled to carry on these activities better, and to develop and manifest these attitudes in all we do.

Of course, this is too long a story to develop in one book. The real answer as to the purpose of each study must be given by the teacher of that subject. But it is worth while for you to consider this question here, even if it cannot be answered completely: Isn't it fair to say that you study history, algebra, English, shop work, language, science, and typewriting in order to enable you to carry on these various activities better and to build up and use these attitudes? The same question might be asked about things other than studies; for example, Why do we have student activities, athletics, churches, homes, theaters, parks? It would be very interesting to measure each of the studies, and each of the things men do, say, advertise, and sell, by the contribution they make to the carrying on of valuable activities and the development of right attitudes.

EXERCISES AND PROBLEMS

We shall now propose to you a number of exercises for your study outside of class. The teacher may ask the whole class to study the same exercise and be ready to report upon it, or different exercises may be assigned to various members of the class so that several points of view are presented.

Prepare your exercise carefully, using pencil and paper and making an outline of what you are going to say or write. If a written lesson is prepared, put it into the best possible shape. Be ready to present the results of your study to the class at the front of the room, and be prepared for questions and discussion.

1. If school is your job, what do you think the qualities of character are that lead to success in school? Is patience needed? perseverance? coöperation? Try to make out a list of the good qualities necessary for success as a school pupil and give a talk on this subject before the class.

2. What are some of the common causes of failure in school life, and how can they be prevented?

3. What value have student activities, such as taking part in athletics, publishing a school paper, running debating clubs, etc.? Do they interfere with success in school? If so, how? How can they be used to improve school work?

4. What kinds of recreation or uses of spare time are best for school pupils? Do some recreations interfere with success in school? If so, how can such interference be prevented?

5. Do you think that being a good citizen in school will help you to be a good citizen all through your life? Explain your answer, and point out the resemblances and differences between school and civic life.

6. Is education today more important or less so than it was ten or twenty years ago? Why?

7. Explain why it is that students in school are not paid money for their work. Do you think money payments would be an advantage? If so, how could they be arranged?

8. Choose one of your studies and show its relationship to several of the activities and attitudes given in the diagram on page 2.

9. Show how factories, stores, and parks are related to the diagram on page 2.

The purpose of this book. With what activities or attitudes is this book concerned? If you will take the book and glance through it or look at its Contents and Index, what answer can you give in terms of our diagram of activities and attitudes? This first chapter, you will notice, is to furnish

INTERESTING WORK IN A LENS FACTORY

you guidance for your school life, and Part II of the book certainly has to do with column 4, that is, with the vocation. Chapters IV, V, VI, and XXII are intimately concerned with citizenship, and Chapter VI with the development of the ethical attitude in column 4.

The fact that the entire book is concerned with citizenship is shown when we consider the intimate relationship existing between occupational life and citizenship. The president's inaugural address deals with such topics as railroads, tariff, coal mines, ships, and other subjects, and usually over 50 per cent of actual space in the printed speech is given over to occupational questions. Political and vocational life are

intimately interwoven in their relationships. All pupils in school, therefore, who will shortly be in charge of city, state, and national governments, must be informed about occupational life. They must know something of labor problems, the relation between employer and employed, the methods of taxation, the purposes and methods of unions, and many similar questions if they are to carry on their own civic and vocational activities successfully and coöperate with other workers and citizens in solving our common problems. This study, therefore, and this book are to lay before you some of the problems with which you will deal all your life in vocational and civic activity. It will show you the problems of the farmer, the question of unemployment, the work of the doctor, the difficulties of the lawyer, the service rendered by the auto mechanic, the preparation necessary for the druggist, and so on through the whole list of the common occupations and problems. Thereby you will be prepared to understand why the farmers try to influence your vote on election day, why men think they have to strike, why the mayor secures the coöperation of the business man, why chambers of commerce are organized, and so on through the manifold activities and organizations of occupational and political life.

A secondary purpose of this book is to enable you to be better prepared to find your place in the occupational world whenever you encounter this problem. You would not start on an important journey without studying geography; neither should you start on an occupation without studying the world of occupational opportunity. As you read about the various occupations, try to put yourself in the position of the workers. Think of the service they render to you and how you in time will bear your share of the world's work.

Our plan in this book is to outline the whole journey of occupational life in Chapter II in a brief but comprehensive statement. We shall then go back to a study of school subjects in relation to vocational life, and next take up the relationships between vocations and citizenship. A study of

the ethics of vocational life will then lead to some directions for studying occupations, followed by a description of methods for discovering your interests and abilities. Part II of the book deals with each of the common occupations in turn, grouped in the order of the census classification. Part III deals with the choice of an occupation, preparation for your calling, the securing of a position, and the progress necessary toward a satisfactory standard of living. There is also a chapter on economic problems in relation to occupational life, and one on the matter of income.

Are today's tasks important? Your specific job for today, let us say, is to study four definite lessons—perhaps English, occupations, algebra, and general science. Now if what we have said above is true, the purpose of every line of every lesson is to teach you how to live better by carrying on the right activities and developing the right attitudes. We do not need to elaborate the thought that success in life is composed of doing the little things well. Suppose we put it this way: What will happen if the worker in this occupation (a student of English) fails to do his daily job? If the lesson is concerned with life, he will be just so much unprepared for successful living and worthy citizenship. It is quite obvious, therefore, what would happen in case of continued failure in this vocation. Mexico and Russia tell this story more clearly than it can be written here; namely, the story of political and economic misfortune caused by lack of education in the masses of the people. You may be sure that your own job is of great importance not only to you but to the world as well, especially since every bit of common sense and knowledge which you can possibly develop will be needed in solving the difficult problems ahead.

Your life calling is important. Sometime, no doubt, you will gradually withdraw from the full-time occupation of being a student and will take up another occupation. You will finish certain educational work that you have laid out for yourself and will enter upon the task of farming, homemak-

ing, repairing autos, drawing plans, teaching, storekeeping, or what not. Unless you choose your occupation wisely and work successfully, you can hardly be a good citizen or be successful as a husband or wife. In your calling you will serve your fellow citizens, and they will contribute money to your support. The importance of work is clearly shown by the single fact that it will occupy one half of all your waking-time. Again, your character as a workman will determine your influence in church, club, political life, and social organizations, your financial standing, and, in general, the way men look up to you for advice and coöperation. Your success in furnishing satisfactory service will determine the kind of home you establish, and in many ways, too, will determine the ethical standard of your conduct in other activities, and your health of mind and body. Finally, since you furnish—let us say, as a farmer—food to other workers, and since they furnish to you in return machinery, clothing, and all the other products you buy, it is clear that your vocation is not just your own affair but is the concern of all other workers as well.

Girls and work. Occasionally a girl will say that she does not need to study occupations, because of her plans to have her own home. A sufficient answer to this care-free attitude is shown in the active interest today of women in all the common occupations. About 20 per cent of all women do not marry, and many who do must continue their work for a time. Those who marry usually have several years' time between school and marriage, and no socially minded girl wishes to neglect the opportunity to serve in useful work during this period. Sensible advice is for the girl to prepare for two occupations,—for homemaking as one, indeed, but also for another and perhaps quite different occupation. Many women, even during married life, have found occupational knowledge exceedingly important, especially in emergencies which sometimes make gainful work necessary. Again, after her children are grown up there is a period in a

woman's life when she sometimes takes great satisfaction in having an occupation in addition to the home duties.

Another strong reason for girls' studying all occupations is the interdependence between the home and the husband's job in the successful management of the partnership called marriage. The man's success in his work must be beyond question, if the home is to be on a firm foundation. Now this success is won gradually. And the advice of the wife is constantly sought in matters of promotion, change of job, change of establishment, and sometimes even change of city, the last involving the moving of the home itself. Further study, investments, home-building, business ventures, and other problems are constantly arising, in the solution of which two heads are better than one, but these heads must be well-informed if the home is not to suffer.

Again, the home itself has intimate relationships with workers in many occupations. In a day's time a dozen workers of various kinds have contacts with the average American home, and the homemaker must understand something of the problems of these workers if she is to deal with them successfully.

Conclusion. Our purpose in this chapter is to consider the relationship which exists between education and work. This relationship is an intimate one, since your school work should make your later occupational life more effective, and since civic and homemaking problems depend for their solution on increased intelligence on the part of all the workers. Schools exist to prepare you for better living today and tomorrow. The aim of the next chapter is to show the various steps you will take and the problems you will solve in proceeding from where you are now to the place you want to hold in the world's work. Later chapters will show the value of school studies and the way people coöperate in the jobs. Other parts of the book will then help you to understand the various opportunities life offers, so that eventually you may be helped to find out where you can serve best.

EXERCISES AND PROBLEMS

1. Explain the purpose of an automobile guidebook or travel book for a trip to Europe. Does this book on occupations bear any resemblance to one of these? If so, show how.

2. Choose one of your studies and show what bad effect might result if it were entirely dropped out of the school program.

3. Did you ever meet a man who claimed that he studied too much; that is, that any part of the time he gave to his studies was wasted? Talk with this person, if you can, and report his statement to the class.

4. What studies are particularly necessary for success in citizenship? Do you think these are important in the school curriculum? Tell why.

5. What studies in the school curriculum will help in teaching how to read the newspaper with best understanding? What is the value to yourself and to society of time spent on such studies?

6. Is it fair to judge men by their occupation? If all occupations are important, why is it that we describe men by the work they do, and would it not be better if we could judge them by their character instead?

7. What objections do you find to the remarks of the book on "Girls and work"? Give opposing statements if you know about them.

8. What instances have come to your notice of the value to a woman of a real occupation other than homemaking? Do you think such an occupation is likely to interfere with home duties?

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CHAPTER II

SIX STEPS TO SUCCESS

One of the boys at a Citizens' Military Training Camp in 1922 was a big, strong lad, eighteen years old, who had been working as a farm laborer at "a dollar a day and keep." He said he had never done anything except "plantin' an' harvestin'," but he seemed to be satisfied with his place in life, though he had sometimes dreamed of learning a trade. He had good habits and had saved three hundred dollars.

Here was a boy who had done very little definite planning for the future. He was advised to write to the state agricultural college to find out about the possibility of taking a short-unit course, perhaps for four weeks during the winter, on some phase of agriculture.

The trouble with this lad was that he was working at what he thought was a permanent job without having carefully considered the factors or steps of his vocational progress. He had merely drifted into his work, and is likely, unless he shakes himself mentally, to drift through life with no real vocational satisfactions at all.

What are the six steps? Six things must be done by a person who refuses to drift and determines to be a real American citizen in the world of occupations:

1. He must discover his interests and abilities.
2. He must study the world of occupations.
3. He must make a choice of a vocation.
4. He must prepare for his chosen calling.
5. He must make a successful beginning in his vocation.
6. He must make such readjustments and secure such promotion and progress as shall establish him on an occupational level worthy of American citizenship.

Not all people take these steps in just this order. Some persons drift into a position and somewhat blindly discover their inabilities, and then perhaps make another choice of occupation and secure the necessary preparation. Thus they travel upwards spirally, going through the various steps over and over again. Such readjustments are important and necessary if one would continue to make progress. Nevertheless, the normal person should try to work out his problems in the order here given. Let us therefore study these six steps, as an introduction to more detailed discussion in the later chapters of the book.

RESTORED TO EFFICIENCY

No matter what your handicap, you can perform occupational service. This man lost his hands, but was then trained to take care of the tool room of a construction company. (Courtesy of the Industrial Rehabilitation Division, Federal Board for Vocational Education)

1. *Self-discovery.* One of the most important purposes of the school is to aid the student in his self-discovery. The wise student uses the experiences of his school and of life to widen his horizon and to discover and develop the useful and helpful powers within him. It is obvious, for instance, that algebra furnishes opportunity for a person to "try out" his ability as a mathematician and therefore to discover whether he has interests in those occupations which require mathematics. The industrial, commercial, and agri-

cultural work of the modern high school furnishes the same opportunity for self-discovery. Student activities enable a person to find out whether he likes to work with others, and many a boy or girl has discovered his interest in journalism through the school paper, or in salesmanship or bookkeeping through working in the school bookstore or lunch room. Alert students will see possibilities both in their studies and in student activities for discovering talents related to such occupations as that of printer, machinist, stenographer, milliner, foreman, clergyman, teacher, musician, contractor, nurse, cashier, teamster, engineer. Through the helpful combination of school study and outside activity one can discover and test his abilities. He can himself make and do useful and necessary things, either under supervision or through self-direction, and can plan, discuss, and direct others in their accomplishment; or he can accomplish definite "stunts" or large pieces of work, such as long walks, trips, camping, building something, learning to play a musical instrument, or managing a game. Effort in school work and success in many kinds of studies will help in the same kind of self-discovery and tryout. One can, if he will, learn to "see a thing through"—to stick to a task and finish it no matter how hard it is. He can learn to work alone and without encouragement or to keep on in the face of discouragements. He can learn to coöperate with others, whether younger, older, or the same age. He should learn to get along with others, to understand them, to be understood by them, thus developing habits useful in occupational life.

In short, if the opportunity furnished by school and outside activities is used to the full, the time may finally come when a person may say, for example, "I like hard physical labor, working in teams, where the group itself has something to say about the kind of work it does," or, "I like to sit in an office and draw plans all day long." It is unfortunately true that a real opportunity to discover one's abilities is not very common. The school program of studies is some-

times too narrow, and the outside life is sordid or so full of drudgery or lacking in opportunity that no adequate self-discovery is possible. In such a case a boy or girl must simply do the best he can, and by keeping his eyes open study his likes and dislikes and his abilities as well as is possible under the circumstances.

Two thirds of adult workers labor with their hands. Somewhere, therefore, each student should try to discover his interest in and ability for handwork. Furthermore, even those who prove the exception and go into commercial or professional occupations ought to know something about handwork, for civic and social if not for vocational reasons. If the school does not furnish opportunity enough, each student, regardless of his future occupation, should gain contacts with such experiences as gardening, work with tools, and machine work. Without such contacts he is likely to be narrowly educated and may be unable to make a real self-discovery. Some people, you know, think they discover some things within them which really are not there. Unless the discovery of a person's interests and abilities is a genuine one, he is likely to prepare only for a failure instead of a success.

EXERCISES AND PROBLEMS

1. Have you ever done interesting and valuable work with tools in which the result is a new article such as a table, shelf, tent, dress, cake, and so forth? If so, give a talk to the class telling (1) what the work was you did, (2) what workers do this kind of work, (3) whether or not you are interested in entering one of these occupations, indicating your reasons.

2. Have you had experience in connection with adjusting machines or making repairs? If so, give a talk on the same topics as those given in Exercise 1.

3. Have you ever engaged in strenuous and long-continued physical exercise, either in the playing of a game, or in an emergency, or in a specially hard job such as haying or moving, or in other work done under pressure? If so, give a talk to the class telling about this work.

4. What experience have you had in strenuous and long-continued mental work, such as taking an inventory? Give a talk based on the same outline as that described in the first exercise.

5. Have you had experience in working under the direction of someone else so that your own efforts were supervised? If so, give a talk telling the advantages of this kind of work and whether or not it interests you.

6. Have you ever planned work for others and directed them? If so, give a talk describing the advantages of such planning, the kinds of positions in which this is required, and whether or not this kind of work would interest you as a life occupation.

7. Have you ever had experience in working alone or against some handicap or discouragement? If so, describe your experiences and what you learned from them.

8. Have you learned to coöperate with other people? What kinds of occupations require coöperation? What are the advantages of such occupations, and are you interested in them? Be prepared to give your statement, with reasons, in class.

9. Select an occupation in which a knowledge developed in one of the school studies is required; for instance, history, English, Latin, mathematics, or drawing. Prepare a talk in class showing the connection between the school study and the occupation.

10. Stage an interview with a fellow student, at the teacher's desk, asking him about his experiences, abilities, and interests. Perhaps you may pretend that you are hiring him.

2. *Studying the world of occupations.* Self-discovery alone is quite inadequate—or even impossible—without simultaneously getting acquainted with the world of occupations. A person might discover splendid ability to blow soap bubbles, but he could hardly make a career in this kind of work. It is a wonderful thought that the diversified abilities and interests of the people in your street, town, or city must be fitted into the needs which these same people have for goods and services. These needs must therefore be studied in detail. It is the purpose of the whole middle part of this book to show the reader some of the interesting facts and problems connected with the different kinds of work that people demand. Each

person's problem, in this second step, is to look out upon daily activities as they are carried on in the work of the world, and to develop a constant habit of comparing his interests and abilities with the demands of occupational life. Thus he may wisely fit his choice of work to the needs of others.

There are many ways of studying occupations. Thus one might go about and hold conversations with workers and so find out what possibilities there are; he might study the writings of workers; or he might merely observe work as it is carried on in store, factory, mine, wharf, railroad, farm, and shop. Even if he could do all these things, however, he would still need to compare and evaluate what he hears in terms of a comprehensive study of occupations. One is likely to obtain from workers themselves very much information which is biased and unreliable. Some physicians will hardly ever advise a person to study medicine, and other workers are very enthusiastic in favor of their own occupation regardless of many disadvantages. What experiences have you had in talking with workers? Can any person give real information about his job if he has had no experience in any other work? Often the storekeeper or teacher can give a better account of the work of a teamster, janitor, or farmer than can these workers themselves. All first-hand information can be made valuable, but it must be criticized and carefully studied in a class devoted to the study of occupations.

Our purpose in this book is to present many kinds of occupations and to lead the students themselves to do their own work in criticizing and evaluating this information. Suppose, for example, one is considering the question of becoming a farmer, and that he has already taken, or is taking, the first step, namely to get a first-hand tryout as a basis for self-discovery. He now comes to his second step, supplementing his tryout experience by means of a comprehensive study of the occupation. In this study he might ask himself the following questions:

Outline for the Study of an Occupation

1. How is the occupation important for the welfare of society?
2. What kind of tasks does the worker perform?
3. What are the advantages of following this occupation?
4. What are the disadvantages and problems?
5. How can a person prepare for this calling?
6. What other qualities or characteristics must he have?
7. What income may be expected?
8. Does the occupation help the worker to live a good life as a citizen and as a private individual?

Comparison is also important. Suppose the student is considering becoming a scientific farmer, and at the same time thinking about engineering and retail merchandising. He would need not only to answer the questions above for each of the occupations but also to make a comparison to show the relative importance, advantages, disadvantages, income, and so forth. In Chapter VII is a more complete outline with many subtopics suggested. There are also throughout Part II lists of suggested readings from which much valuable information may be gleaned.

EXERCISES AND PROBLEMS

1. Prepare a brief report on an occupation which interests you, following the outline of the eight steps given above or any other good outline prepared by yourself. Each student may select a different occupation.

2. Explain the value of understanding the occupations of other people.

3. Show how it is an advantage to a person and those with whom he associates to know about workers even when he is playing or traveling. Give instances.

4. Try to secure from a worker a story of his day's work from beginning to end. Tell about this work in class.

5. Choose two occupations and compare them point by point, using the outline given above. Finally, tell which you think is the better occupation for one who is a high-school graduate.

3. *Choosing the occupation.* There was once a boy who declared that he had decided to be a naval architect. We were surprised at this choice in one so youthful, and naturally enough wanted to find out how he had come to this decision. It turned out that he had traveled in a train from Denver to Boston with a naval architect who had told him all about his work, and that this talk had led to the boy's decision. Later the boy found he could not do the necessary mathematics in high school, and had to change his choice. He is now a cornet-player in a band. This illustrative case is typical of the person who drifts and makes a choice, or says he has made a choice, without first discovering or trying out his abilities, and without an adequate study of the advantages and disadvantages of several occupations. The best way to choose an occupation is to take the first two steps as carefully as possible. Thus one may gradually arrive at a sensible choice.

MANY WOMEN ENJOY LATHE WORK

Long before it is necessary to leave school a pupil can prepare lists of ten or a dozen occupations which interest him, arranging these in the order of his preference. By a gradual process of elimination, accompanied by self-study and occupational enlightenment, he may select the one or

two occupations which seem best for his career. If practicable, temporary work at some of these occupations may be obtained. Various tests and rating-systems may be used to measure one's abilities. One such test we offer in Chapter XX. Its purpose is to stir up your interest in studying yourself and the occupations as a basis for your choice.

General-intelligence tests[1] can sometimes be obtained, and these will indicate your chances of success. School studies also will do the same thing. For example, it is sometimes possible for a person of only average or low ability in mathematics to become an architect; but it is certainly not very common, and the chances are perhaps eight out of ten that a person of low ability would fail as an architect. If a given student has such a high degree of tact, perseverance, general information, friendliness, honesty, trustworthiness, and so forth, as may make him succeed in spite of his low grade of ability in mathematics, then he might prove the exception to the rule.

Trade tests are also being developed which ask questions relative to one's technical knowledge of a particular occupation. Thus, a person who wishes to be a toolmaker can have a series of questions asked him which will determine fairly well whether he is a novice, apprentice, journeyman, or expert.

Avoid the false guidance of books, magazine articles, and advertisements with particular "systems" to sell, or those which offer sudden success or "short cuts to fame and fortune." There is no short cut either in the choice of an occupation or in the preparation for it. For thousands of years people have tried to discover how to choose an occupation by the shape of the head or the characteristics of the face, but

[1] A general-intelligence test, as you probably know, is merely a series of directions and questions on a number of different exercises of the mind, such as work with diagrams, arithmetic, straightening out sentences, filling blanks, matching words, showing your knowledge of general affairs, and so forth. It is possible that your teachers will know how to give such a test. It is not greatly different from a school examination.

they have never been able to prove their methods useful. In contrast with any such methods, it is important to remember that the choice of your occupation is an educational proposition. You cannot choose a calling in one day's time or in one year's time. Your decision must be based on a period of long study both of yourself and of the needs of your fellow men.

To aid you in this study we shall provide a special section —Chapter XX. It is obvious that your choice cannot be sensibly made until you have studied the various occupations. The study of the world's work and the study of yourself must both be provided for, and we are therefore considering all these questions in succeeding chapters, to give you the necessary foundation for this choice. Even after such study it is not at all necessary for you to come to a final decision. In fact, you should always think of alternative choices; many persons have two occupations. During your school career, furthermore, unless you are forced into a position where a decision is necessary, you had better say that you have not definitely decided but are considering three or four possibilities.

EXERCISES AND PROBLEMS

1. Explain the importance of careful thinking before deciding on an occupation.

2. Interview three people to find out how they happened to decide on their present occupation. Give a talk in class about their experiences.

3. Can you find someone who changed his occupation relatively late in his life? Find out, if you can, the causes of this change and give your report in class.

4. Look over the advertisements on education given in one of the popular magazines. Bring the magazine to class and discuss these advertisements.

5. Show how a person must consider his own personal qualities of character before deciding. Is it possible for another person to decide for you?

4. *Preparing for one's vocation.* Naturally enough, a person should not prepare for an occupation which he has not carefully chosen, and this shows the necessity of delaying until you are thoroughly sure. Unfortunately there are thousands of boys and girls and young men and young women taking vocational courses—in trade schools, agricultural

LEARNING TO BE AUTO MECHANICS

Courtesy of the Worcester Trade School

schools, correspondence schools, normal schools, schools of law, and the rest—who never will follow the callings for which they are preparing. Even after you have decided, therefore, it is worth while to get a broad preparation of many different kinds of studies before signing up for a vocational course. Further, it is important to remember that unless you are over twenty-one you are not likely to succeed in correspondence courses or evening courses. Such evening work and correspondence study are organized for adults. Sometimes persons between eighteen and twenty-one succeed

with them, and once in a great while an exceptionally persevering person who knows how to work independently succeeds even if he is under eighteen; but the high schools, trade or commercial courses, technical colleges, or professional schools are the places where most people ought to get their preparation. We shall later describe just what other kinds of schools can do and are doing very well, and we shall describe also the peculiar advantages of the part-time system. For the present, however, you should study other chapters and proceed in your general education. We shall take up in Chapter XXI the whole matter of preparation for your chosen vocation.

5. *Making a successful beginning.* The fifth step in one's vocational progress follows close upon the completion of one's vocational course. In fact, under the part-time plan you would begin to do work after the first or second year of the course. Here you have the serious and difficult question of selecting an employer, and you should have a great deal of knowledge of oral English, so that you can speak up to him; of labor economics, so that you will know something of what wages you should expect; of vocational citizenship, to know how to behave toward your fellow workmen and your employer; and of vocational ethics, to know how to carry on your work in the right way. This step too can best be taken after you have read other parts of this book; and we are therefore devoting a special chapter to "Securing a Position" —Chapter XXIV.

6. *Readjustments and promotion.* The final step is represented by the distance between one's first job and the occupation one has when he can claim a real citizenship in the world of work and an American standard of living. This progress goes on almost all of one's life, and there are cases on record where men sixty and seventy years old have made radical readjustments of their careers with great benefit to themselves and their loved ones. Such readjustments require alertness to take advantage of better opportunities for

service, and many times mean moving from one city to another or undertaking new courses of study to prepare for larger opportunities. A frequently quoted proverb declares, "Opportunity knocks but once"; but this statement, like many other proverbs, is wholly false. Every day in your working-life is likely to present many an opportunity. One must not neglect the little things in the hope that some surprising opening may present itself. The whole of this book and all its parts should be thoroughly studied and understood by one who would take advantage of the opportunities for service which lead to the highest satisfactions in life. Sometimes the knowledge of an occupation far distant from your interest may help you. For instance, a girl serving in an insurance office may happen to know something of the work of a mining engineer who calls on business, and may thus be able to show greater usefulness; or a machinist who knows about the work of the chemist may thereby prove his usefulness. On every page, therefore, you may find information which will help you in your own progress and readjustment and add to your educational equipment for life's problems. We shall give special attention to the problems of progress, readjustment, and promotion in the final chapter—Chapter XXV.

EXERCISES AND PROBLEMS

1. Explain why schools are necessary for preparing for a vocation. What are the disadvantages of learning in a store, shop, factory, farm, or mine?

2. Visit a store, factory, or shop and see whether you can find anybody teaching other workers how to do their tasks. Give a report on what you find.

3. Why is it necessary to have practice in oral and written English in order to secure a position?

4. Make a list of the other things a person should know about before applying for a position, and explain these to the class.

5. Explain to the class what kind of employer is the best one to work for.

6. Explain the advantages and disadvantages of sticking to the first job rather than changing to a different one.

7. What are some of the false reasons which lead children to withdraw from school?

8. Explain how in your opinion the children who now leave school too soon might be held longer.

9. What do you think of the proverb "Opportunity knocks but once"? Give instances, if you can, to prove the truth or falsity of this statement.

10. Give a brief account of the life of some person, showing how he took all these six steps to success: self-discovery, knowledge of opportunity, choice, preparation, beginning work, and progressive readjustment. You may choose your own father, or another citizen, or a historical character like Lincoln.

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See also our list at the end of the book.

CHAPTER III

HOW WORKERS USE SCHOOL STUDIES

Should students study? Several investigations have been made to compare the work of students in high school with their later work in college and with their success in life. Such investigations show that approximately three out of every four students have the same grade of success in college and in life as they have in high school. Only one out of four, if he is a good student, "loses his stride" and does poorly; or, if he is a poor student, "wakes up" and does well.

This is another indication that school is your job, and that you should succeed in your school job if you intend to succeed in college or in work. Now the studies of the school are for the purpose of helping you to understand what life is about, and we aim in the present chapter to show how the school studies are related to the world of work.

These studies which you are taking now in high school help you to understand your job. Many horses can complete the whole grocery route or milk route without a single mistake, and that is more than some men can do. But shouldn't you like to know as much as possible about your job—where the materials come from, what the superintendent means when he talks with the foreman about the work, where the money is obtained, where the power which drives the machines comes from, and all about the chemical and physical forces which operate around you? Virgil, the Latin poet, says, "Happy is he who knows the causes of things," and without a good general high-school education you are not likely to know much about the complicated machinery of the world of occupations.

THE ENGLISH BRANCHES

Oral English. Is there a worker you can think of who needs no ability to speak well? Perhaps you will say a lighthouse keeper, all alone at his post. But in securing his job and in reporting on it, and in telephoning or talking to occasional visitors who come to him on matters of business, he will need to speak distinctly and accurately. Who is there who does not need to be able to give a clear explanation of some process? The world of occupations is full of occasions requiring explanations, descriptions, arguments, interviews, conversations, business meetings, conferences, and all the other situations which require speaking. Of course, the salesman, actor, lawyer, teacher, clergyman, priest, and editor make special use of oral English. But at the same time the banker, engineer, janitor, merchant, and a host of others encounter unexpected and important situations where effective speech is required of them. A civil or electrical engineer may know perfectly well that this factory should build a new power plant, but how shall he convince the board of directors when he is called before them for his statement? An inventor may know very well that he has a splendid invention, but how can he convince the investor? Recently a young woman doing an excellent piece of research in a factory lost her position because of a campaign of economy on the part of the managers of the concern. She knew perfectly well that her research would itself lead to economies many times more in amount than her salary, but she made such a poor showing in her explanations that she had to go.

Even in the most common occupations—such, for example, as those of the shoe worker, rubber worker, steel-mill hand, longshoreman, and power-machine operator—committees of the workers are being formed which require business meetings and the ability to speak promptly in support of a person or a measure, under the rules of parliamentary law. Again, the ability to read a paper is necessary. A worker

will be required to read an extract from a magazine or newspaper, or a printed or typewritten report, and must stand before his fellows and accurately and clearly give them the substance of the paper.

The nurse, the homemaker, and the dentist should all have pleasant voices and conversational ability if they are to have the best success in their work.

Written composition. Warren, in his book "Thoughts on Business," tells of thirty answers to an advertisement. Twenty-eight of the letters went into the wastebasket without the slightest consideration of the persons who wrote them, and only two were selected for a personal interview. The necessity of writing a good letter of application might occur in connection with any job whatever. Sometimes the correct and careful filling-out of a blank is almost the sole test of fitness for the position. It is true here, as in oral English, that the teacher, clergyman, author, editor, architect, lawyer, secretary, stenographer, and reporter are the chief users of written composition. Yet it is equally true that any of the workers may suddenly find himself in a situation where careful writing is required. Even an errand boy or a bellboy may be asked to write down a statement of what happened. The homemaker too has need of written English in many duties connected with her records, bills, letters, and other responsibilities. Growing numbers of workers need to learn how to write on the typewriter, at least as fast as they can write by hand.

Penmanship, grammar, and spelling. Good handwriting, correct speaking, and correct spelling are connected with oral or written English. In whatever work you are engaged you will probably be required to keep some records. Every person who has half a chance at school can learn to write plainly, even though his writing be not ornamental. He can at least make holes in his *e's*, separate his words, and make his *u's* different from his *n's*. Many mistakes are made in mere copying, and you should obtain school practice in this exercise.

There are actual cases on record where men have been refused promotion, especially in banks and stores, because of bad grammar or the use of slang. In one case it was definitely stated, "This boy persists in saying 'ain't,' and we cannot put him behind a window in our bank where he will have to talk to customers." In your boy or girl circles it may seem fun to use bad grammar or slang, but before you get the habit remember that many people in business, far from being amused, are positively repelled by mistakes, whether made ignorantly or on purpose.

You probably will not have regular class exercises in spelling in the high school, though your composition teachers will frequently remind you of your mistakes. You must learn two important things about spelling. First, it is helpful to try to see the word mentally before you write it down, and, second, it is important to learn to use the dictionary wherever there is any doubt in your mind. Mistakes in spelling offend people in the same way as mistakes in grammar. The stenographer, typist, printer, and proofreader must be especially careful about spelling.

Literature. The standard for all good writing is found in the good writing of the past. Remarkable improvements in the style of writing used by factories, stores, advertising agents, salesmen, and business men have been noted during the past two decades. Circulars describing automobiles, clothes, houses, railroads, and many other objects of commerce are not only well illustrated but are carefully and sometimes artistically written. High-class advertisements and circulars are now very common indeed. Unless one studies literature in the high school carefully, he will not learn the good standards which have been developed in the past. A good training in literature is essential for the following workers: actor, author, editor, artist, clergyman, lawyer, priest, architect, teacher, secretary, sculptor, musician. It is not so directly vocational, but is of basic importance, for all professional workers and for the homemaker.

Furthermore, literature is full of interesting references to the world of occupations. Perhaps you have read "David Copperfield" and know what it tells about occupations. There is Mr. Micawber, with his vocational expectations, "waiting for something to turn up." There is Steerforth, getting into idleness and evil because he had no work in the world. Then there is Uriah Heep, who uses his confidential knowledge of Mr. Wickfield's financial condition to try to secure Agnes. There is Dora, the unsuccessful homemaker, and Agnes, the successful one. There is David himself, first in a blind-alley job washing bottles in a factory, then getting his education and becoming a stenographer and then an author. It is well known that the story represents the life history of Dickens himself. Finally, there is the new start in life when Mr. Micawber and the others go to Australia. Whittier, Longfellow, Burns, Milton, Scott, Shakespeare, Stevenson, Irving, George Eliot, and all the other great authors were deeply interested in common living, and this interest naturally enough led them into questions connected with work.

EXERCISES AND PROBLEMS

1. Can you find out, from some grown person who is doing very well in his job, what kind of record he made in high school? Perhaps you can find this out from eight or ten persons, and report the result in class.

2. See whether you can find a person who made a failure of his high-school work but has succeeded in occupational life. How do you account for his success?

3. Explain how the humblest worker may sometime need the ability to talk. Give instances.

4. Show how one or more of the professions are very much dependent upon the ability to speak well. What study of oral English do persons pursuing such professions need to make?

5. Why is it that some advertisements require the applicant for the position to write a letter in his own handwriting? What has this to do with the work?

6. What workers make especial use of writing? Find out, if you can, whether penmanship or typewriting is more important for them.

7. Can you think of any occupations which require absolutely no ability to write? Give a talk showing how this lack may not be a handicap. Are these occupations desirable ones?

8. Why is it that people are so particular about grammar and slang? Is this fair? What difference does it make in business or industry or agriculture?

9. Choose a poem, book, or other piece of literature and show how it gives interesting and important lessons in connection with work.

10. Is it right to call advertising-material "literature"? Why?

11. What effect is the education that is now being given likely to have upon the life of your community ten years from now?

12. What workers have special need for a study of good pieces of writing?

13. Which uses of literature are more important—for recreation and culture or for vocational life? Give reasons.

THE SOCIAL STUDIES

Geography. Geography is the study which tells how man uses nature for his purposes. Whatever your occupation is to be, you cannot possibly understand the materials with which you deal unless you know something about natural resources, places, products, and the workers and processes that convert raw materials into finished articles. If we mention the farmer, the nurseryman, the fruit-grower, the architect, the teacher, the homemaker, the editor, or the printer, we should still have to expand our list to include all people who travel, as well as the author, the actor, the landscape gardener, the secretary, the stenographer, all the different kinds of engineers, the postman, the detective, the lighthouse keeper, the policeman, and, indeed, practically every calling. It is true that geography books are not always written with workers in mind, yet you can easily see that the reason we are interested in the geography of the Netherlands more than in that of Greenland is that one supports workers

whereas the other does not. Geography is one of the most interesting and important studies from the standpoint of occupations.

History. All occupations have a history, though that of the aviator, radio operator, and others is only recent. If you wish to understand the history of the occupations you are especially interested in and to see how they have contributed to the welfare of mankind, you must not neglect the study of history. In the study of ancient countries see what beginnings were made; note the surveyor, civil engineer, farmer, and common laborer of Egypt; the landscape architect and laborer of the Tigris and Euphrates valley; the rabbi, banker, and merchant of ancient Hebrew times; the sailor, merchant, and explorer of Phœnicia; and the hunter, soldier, governor, and political representative of ancient Persia. The Greeks too show wonderful beginnings, especially in the case of the architect, sculptor, painter, actor, author, and silversmith. Consider the lawyer, statesman, military commander, physician, and teacher in ancient Rome; the work of the nurse, physician, stonecutter, ironworker, builder, printer, exporter, and trader of the Middle Ages and the Renaissance. In modern European history we should think of the developments in almost all of the occupations we have already named, as well as in those of the engineer, cook, watchmaker, mechanic, manufacturer, and chemist.

United States history shows the most marvelous developments of industrial, agricultural, commercial, homemaking, and professional occupations, and throughout the pages of your history you can see important indications of wonderful things which have happened to the occupations which you are considering and whose history you will help to make.

Civics, sociology, economics, and occupations. The study of citizenship, of social relations, of economic principles, and of the occupations themselves would duplicate substantially the same occupations we have named above in reference to geography and history. Special chapters—the next two—

will deal with citizenship and coöperation. We know that all workers need to be familiar with laws, especially those laws which are related to their work. One of the chief purposes of all work is to make a person a better citizen so that a better development of citizenship and public life will result. The policeman, the dairyman, the plumber, the sheriff, the detective, the editor, the teacher, and the homemaker have special need of civic knowledge.

Economic principles connected with work will be discussed in Chapter XXII. The farmer, lawyer, teacher, editor, stenographer, secretary, and all professional people need this knowledge, for social contacts and coöperation are of exceptional importance in occupational life. No one can be a law to himself or a success all by himself. All must depend upon the coöperation of other people, and this requires a knowledge of society and of economics.

It is probably in occupations as a school study that you are using this book. We shall not, therefore, add here to the statements in the first two chapters on the importance of a study of occupations to your success.

EXERCISES AND PROBLEMS

1. Choose an occupation which makes the least possible use of geography. Then show in class how geographic knowledge might be valuable even for such a worker. Ask the members of the class whether they can think of any occupation which does not need a knowledge of geography. Can you answer them?

2. What occupations make most use of geography? Explain how.

3. Do you think the history books pay enough attention to workers? Was the history of Greece or Rome dependent upon workers as well as statesmen? Explain the importance of the workers.

4. Show how it is important for every worker, even the furnace-tender, garbage-collector, truck-driver, and janitor, to know about the history of his occupation.

5. Is it important to have ideas about the future of a person's occupation? If so, explain why.

6. What workers are engaged in serving us through the city, state, or national government? List several of these workers and tell how they help us.

7. Mention several workers and show why they need to know about civics in order to be successful in their work.

8. Do you know of incidents in United States history which show the influence of vocational questions on political action? How about the Dred Scott case, the contest for Kansas, the abolition of slavery, the annexation of Texas, the Webster-Hayne debate, the War of 1812, the Spanish-American War, the World War?

9. Can a person be a good worker without taking any interest in civic questions?

10. Why is it that state governments set up regulations to decide who may become doctors, lawyers, architects, etc.? Are such regulations necessary, and what does this mean in regard to the importance of occupational life?

MATHEMATICS, SCIENCE, AND DRAWING

Arithmetic. Arithmetic, like oral English, must be called a necessity for all workers whatsoever. A class recently attempted to list the workers who might be required to multiply accurately and correctly such numbers as $40\frac{1}{2} \times 62\frac{1}{2}$. They had developed a list of fifteen or twenty occupations, including the carpenter, painter, paper-hanger, shoemaker, contractor, cashier, homemaker, and others, when somebody suggested that a man might work $40\frac{1}{2}$ hours in a given week at $62\frac{1}{2}$ cents an hour and might have to figure his wages. Thus, in connection with the pay envelope, at least, it appears that all workers need arithmetic. The cashier, contractor, architect, clerk, collector, and others named above may deal very considerably in arithmetic, but all of us need it at least occasionally. What we need may not be extensive. Few of us, for example, will need cube root, or even square root, but what we do need we ought to know well.

Algebra. A peculiar thing about algebra is that it is chiefly important not in itself but as a ladder to the higher forms of

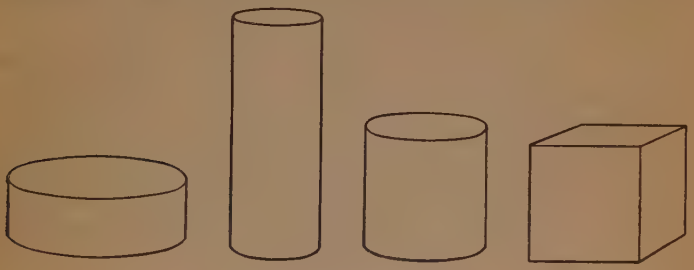
mathematics. The designer, toolmaker, electrician, architect, and all engineers need algebra directly, and the workers we shall describe in connection with geometry, trigonometry, special mathematics, and college mathematics will also need it for their work, as well as many of those listed below under the various sciences. Thus even when algebra seems abstract and impractical, if you will do it well, you will find it useful in later scientific or mathematical studies.

Geometry. Geometry teaches all the principles which are used in the measuring of those queer shapes you studied in arithmetic in the eighth grade: how to find the area of a triangle, circle, parallelogram, hexagon, and the rest. If you learned those calculations in arithmetic, but have not yet studied geometry, you are like the delivery horse so far as understanding what you did is concerned. Geometry, as well as algebra, is the basis of trigonometry and college mathematics.

Trigonometry. How should you like to be able to find the height of an airplane by means of a surveying instrument, or to find the distance between two houses on the opposite side of a river which you cannot cross, or to find the width of the river itself? Trigonometry is used chiefly by surveyors, and it helps to solve such problems. It uses a combination of algebra and geometry and, in the form of solid trigonometry, or spherical trigonometry, develops the basic studies which are used in college mathematics and in astronomy and navigation.

Special mathematics. There are special forms of mathematics for the statistician, the banker, the insurance man, the accountant, and others. The insurance expert knows the "expectation of life" of a man at any given age and can figure his insurance rates accordingly. There are "shop mathematics," "household mathematics," "hotel mathematics," "textile mathematics," and, as it was recently described, "apple mathematics" (for calculations connected with the raising and marketing of apples).

College mathematics. Engineers of all kinds—mechanical, civil, chemical, electrical, mining, sanitary, and the others—have constant use for mathematics higher than any taught in high school. They build upon the successful accomplishment of high-school mathematics, but study at least three years more, either mathematics or combinations of mathematics with drawing, physics, or chemistry. The astronomer, navigator, architect, designer, and others, in figuring



WHICH SHAPE IS BEST?

Each can contains one quart. Which one uses the least amount of tin? This is a problem in college mathematics

distances, velocities, strength of material, and weights, use principles and formulas requiring analytical geometry, differential and integral calculus, and other higher studies. A college senior, with a long table spread over with mathematical calculations, when asked, "What are you trying to do?" replied, "I am trying to find out how big the nozzle of a hose should be, with a given head of water, for hydraulic mining."

General science. General science takes up, sometimes in turn, sometimes in combination, each of the special sciences discussed below. All the workers we have included under the sciences need to have some important facts of science at hand. Consider, for example, the miner, plumber, auto mechanic, grocer, hardware merchant, salesman, janitor, homemaker, teacher, nurse, and architect. These workers must know about the simple principles of the tools or materials

they deal with, as well as something about matters of safety. Safety knowledge goes into simple questions of chemistry, physics, and many of the other sciences. Consider, for example, a baggage man or stone-worker who hoists a trunk or a stone by attaching his hook to a rope which binds the trunk or stone tightly about. If a trunk weighs a hundred and fifty pounds, a lift applied in the middle of the trunk to a tight rope may cause a pull on the trunk rope of well over three hundred pounds. Serious accidents may result, and such a worker then wonders how the accident happened. Or a man attempts to slake a barrel of lime all at once by putting with it a generous supply of water. He then wonders what the trouble is when things begin to happen. Or, again, a fire starts from the spontaneous combustion of a rag which had been left in a dangerous place after it had been used to wipe up linseed oil or varnish. Almost all workers need to know something of the simple principles of science.

Botany and zoölogy. Biology includes both botany and zoölogy, and these are particularly necessary for the dairyman, farmer, poultry-raiser, forester, nurseryman, fruit-grower, veterinary surgeon, landscape gardener, and many others. You ask why it is that a fruit-grower needs to know about zoölogy. Why not just botany? You will be answered when we tell you that some apple-growers spray their trees nine times each season. Not only the actual workers in a mechanical way need to know about botany and zoölogy but also those who deal with plant or animal products. Thus, the department-store salesperson and the clothing salesman need to know about textiles; the grocer, about foods; the manufacturer, about sugar, chocolate, acids, rubber, or what not. All these products, and many more which will occur to you, relate themselves to botany and zoölogy. The homemaker also needs much knowledge about these sciences.

Physics. Physics is a study which is concerned with several main departments. Following are the chief ones: mechanics, heat, sound, light, color, and electricity. We have

space only to list the workers who are especially concerned with these departments of physics. First, however, let us call your attention to the fact that all workers who use their hands are concerned with forces. Now two out of three, or three out of four, of the workers of the world earn their living through handwork, and many others in directive or supervisory positions are concerned with such mechanical principles.

Mechanics deals with force, weight, gravitation, hoisting, collision, friction, leverage, and velocity. Let us list the following workers who are actively concerned with mechanical forces: auto mechanic, builder, carpenter, blacksmith, coppersmith, machinist, electrician, instrument-maker, watchmaker, miller, aviator, lumberman, stonecutter, boilermaker, shoemaker, plumber, jeweler, sheet-metal worker, locomotive engineer, fireman, signalman, watchman, dentist, architect, all the professional engineers, elevator operator, inventor, janitor, porter, and homemaker.

A knowledge of heat and its principles is especially required by the fireman, janitor, goldsmith, chauffeur, glass-blower, ironworker, presser, cook, launderer, steam-fitter, architect, nurseryman, fruit-grower, baker, dentist, confectioner, jeweler, auto mechanic, locomotive engineer, electrician, and homemaker.

A knowledge of sound and its principles is needed by all musicians, by the piano-tuner, and by such engineers and mechanicians as require the ability to judge the running of a machine by its sound. Numerous instances will occur to you.

Next, light and color have principles which are important to the painter, artist, decorator, illustrator, actor, electrician, photographer, motion-picture operator, homemaker, dressmaker, hairdresser, architect, and landscape gardener.

Electricity is important for the electrician, chauffeur, auto mechanic, motorman, signalman, elevator man, homemaker, janitor, salesman, policeman, inspector, motion-picture operator, watchman, architect, all engineers, lawyer, and teacher.

Chemistry. Chemical principles are becoming more and more important for many kinds of workers, and the rapid growth of this science indicates that few workers will be safe without at least an elementary knowledge of chemical prin-

ciples. The following list will indicate some of the workers who need to know about chemistry: lithographer, rubber worker, tanner, grocer, artist, baker, cook, candy worker, illustrator, physician, surgeon, photographer, nurse, janitor, painter, paper-hanger, laundry worker, assayer, compositor, printer, engraver, plumber, dentist, almost all engineers, and certainly the person in charge of a home. A case is on record where the workers in a paper mill who did the crudest kind of common work were taught simple chemical principles about the chemical changes going on in the cooking of the pulp out of which paper is made, with the result that an increase in efficiency and economy of operation was very shortly noticed.

Other sciences. Someone has said that there is a science of doing each thing to be done in the world; and from the increase in the number of sciences during the past century, one would judge this to be a fact.

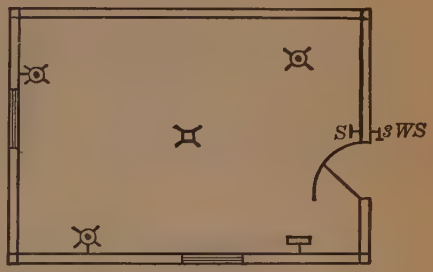
Physiology and hygiene are, of course, especially important for the physician and surgeon, for the homemaker, and for every person in connection with his own welfare. Geology deals with the formation of the soil and the earth's surface and is particularly important for the mining engineer and, in a simple way, for the miner, surveyor, architect, and farmer. Astronomy is the profession of many full-time workers and is largely needed in connection with navigation, which is another science in itself. Meteorology is the science of the weather and is of great importance to the farmer, sailor, and shipper, as well as to all others whose work is affected by the weather. Metallurgy deals with the study of metals and their analysis; a whole group of professional workers use the science, while others, in the factories and mills where metals are used, are dependent upon their results.

Psychology is a study about thinking and feeling. Everybody must have at least a form of practical psychology to enable him to understand his fellow workers, and such practical knowledge of human nature and human thinking is needed by the advertiser, decorator, delivery man, baker, insurance man, salesman, detective, servant, policeman, reporter, barber, bellboy, mother, and many, many others. In addition a more careful study of psychology is needed by the nurse, secretary, stenographer, physician, surgeon, director, musician,

actor, author, labor-union officer, employment manager, factory or store superintendent, teacher, superintendent of schools, social worker, and publisher.

Any good dictionary or encyclopedia will give you lists of other sciences with which professional workers are concerned. All of them also are important for the welfare of large classes of people, and more and more the common workers of the world are likely to know about them.

Free-hand and mechanical drawing. Free-hand drawing constitutes another universal alphabet or way of thinking which all workers need. Here is a subject which, indeed, everybody ought to study. How often in explaining a complicated matter we like to take a piece of paper and draw a sketch to help our talk! Common explanations of street directions, of the looks of houses, or of the arrangement of rooms require this ability. Sometimes, also, we like to sketch how we want to see a dress made or a window put into a building. The clothing-designer, dressmaker, milliner, painter, paper-hanger, architect, illustrator, landscape architect, among others, are constantly engaged with free-hand drawing. They must have not only a background of knowledge which the high school can give, but subsequent training. In spite of all the ugliness of our billboards and posters there is constant improvement, and in this field the next generation will achieve still higher artistic standards.



A WORKING DRAWING

These marks represent electric fixtures in a room. Architects and draftsmen make them, and contractors, foremen, electricians, carpenters, plumbers, electric salesmen, stock clerks, and inspectors must be able to read them correctly. Would it be of any use for the owner to know them?

The study of mechanical drawing deals more often with straight lines and carefully measured plans. The builder, carpenter, architect, electrician, plumber, machinist, toolmaker, and others need this ability, and a large and growing number of workers need to be able to "read" plans; that is, to look at blue prints or other diagrams and know exactly what they mean. The draftsman, architect, and landscape architect, as well as all engineers, are the ones chiefly concerned with the productive side of mechanical drawing.

EXERCISES AND PROBLEMS

1. Select five occupations and show why the workers in these occupations need accurate and rapid ability in arithmetic.

2. Give a demonstration to the class with a drawing at the blackboard to show the use of geometry or trigonometry by one of the following workers: carpenter, architect, surveyor, astronomer, gardener, dressmaker.

3. See whether you can find a person who makes daily use of college mathematics. Interview him and note what he says about the value of college mathematics in his occupation. Ask him whether high-school mathematics is necessary as a basis for college work. Report your results to the class.

4. Give some new instances showing that workers must know about science in order to be safe in their work.

5. Give an account of the farmer's use of biology, making as many special applications to botany and zoölogy as you can find.

6. We have given a list of workers interested in the use of mechanical forces. Select two of these workers, or any two of your own, and show why they must know about such things as levers, pulleys, velocities, balances, water pressure, etc.

7. Give a detailed report on one of the workers who need to know about heat or light or sound.

8. Give a report to the class telling about some simple uses of electricity in connection with one's job.

9. How do workers use chemistry? Give as clear and comprehensive a statement as you can about the use of chemistry by at least three types of workers.

10. Can you find out about the use of some of the sciences mentioned above as being taught wholly in colleges? Give an account of what you have learned.

11. Using the blackboard, give some instances of the use of free-hand drawing in connection with one or two occupations.

12. Using the blackboard, give some instances of the use of mechanical drawing in connection with one or two occupations.

OTHER BRANCHES

Foreign languages. It is a great delight, whatever one's work, to be able to identify foreign words when they concern this work. Too often in the high-school courses we deal solely with stories, poems, or essays, and fail to remember that the largest use of language is undoubtedly in connection with man's work. The French have wonderful books on art, drama, architecture, and science which need to be read by professional persons, and in German there are books and articles on chemistry and other scientific subjects. The importer, exporter, manufacturer, editor, clergyman, teacher, actor, musician, author, engineer, artist, photographer, and sculptor, if they go very far in their professions, will occasionally need to know something of the common foreign languages, particularly French, German, and Latin. Latin is required for many advanced courses and is the key to much of our English speech. Together with the Greek, it is the foundation of many occupational words, such as the following: mechanical, electrician, agriculture, domestic, via, cent, arbitrator, union, transportation, manufacture, architecture, automobile, telephone,—indeed practically all the technical words used by physicians, dentists, lawyers, teachers, and engineers.

We must remember as well that the French, Germans, Romans, and Greeks, as has been suggested above in the discussion of history, started most of the common occupations we follow today, and therefore represent wonderful

civilizations which we have drawn from and which we need to understand. A host of commercial languages are necessary for many workers who are concerned with foreign trade. Spanish, Portuguese, Italian, Russian, and Chinese are of great commercial importance now and will, no doubt, become increasingly so. There are thousands of translators and interpreters. The Post Office Department requires experts in forty-one languages.

Music. Four kinds of workers use music as a profession: composers, performers, teachers, and salesmen of music and musical instruments. Most persons use music, no doubt, in an amateur way and for recreational purposes. There are many semiprofessional workers who give part of their time to musical performances or teaching, along with other occupations. Music is also of importance to the homemaker, both in her work and to lighten her drudgery. On account of the great good that music does in the world, all of us should know something about the workers who furnish us music.

Physical education. All workers need enough practical physical education to develop sound bodies, able to resist the disadvantageous things which happen in connection with work, and should know the common principles underlying the care of the body well enough to keep it fit. Full-time workers who use physical education are not very numerous. Perhaps the life-saver, fireman, actor, athletic coach, professional ball-player, and a few others would represent most of them.

Special college studies. College studies such as philosophy, ethics, anthropology, government, religion, and other subjects we shall not discuss here. Anybody can easily see the workers who are concerned with them. Furthermore, these studies very often become part of the vocational preparation of professional people.

Vocational studies. We shall not discuss actual vocational preparation here because that is the subject for Chapter XXI. Commercial studies, such as typewriting, simple bookkeeping, filing, clerical practice, commercial arithmetic, commer-

cial geography, commercial law, etc., are important for all workers because of the fact that business ability is necessary everywhere,—in the management of churches, women's clubs, and homes. The keeping of simple accounts should be learned by everybody, and this becomes vocational for large numbers of workers whom the census classifies as commercial or clerical.

It is the same way with manual training or the industrial arts. These exercises relate to the simple use of tools, such as any husband needs and such as the homemaker herself is frequently called upon to show. Almost any worker is likely to find need for using his hands in connection with putting up a shelf, driving a nail, adjusting a machine, or some other simple process.

Agriculture or simple gardening and its principles are basic for all the occupations of the world. Without agriculture we should have few raw materials and little food or shelter. Every student should have some contact with the soil in order to understand not only his own life but especially his own actual occupation as well, in so far as it depends, as it inevitably must, upon the farmer.

Homemaking studies. High-school studies connected with homemaking are also important for all students. Consider the many situations in which a man must know something about the care of children, cooking, cleaning, buying, sewing, etc. Some high schools give courses in cooking or sewing to boys. An interesting thing about the study of homemaking is that even a little is likely to be valuable throughout life, and this, of course, is not true of some intricate, uncommon things, such as setting type. Most girls will take several courses in home economics in the high school. The homemaker's task is a composite of a number of different kinds of special jobs, and she has need for a large variety of studies.

Callings requiring high-school graduation. High-school studies cannot prepare one adequately for a profession, as the

callings listed under this head require part or all of a college education. Nevertheless high-school studies are foundational to these higher studies and are therefore indispensable.

One reason for securing as broad as possible a foundation of general studies is that if you begin to specialize you cut off your opportunity for many occupations. Dr. A. E. Winship, in his pamphlet "Why Graduate," publishes a list of schools and occupations closed to those who do not graduate from high school. Many times it is impossible for a person to continue his broad education, but we shall later discuss the alternatives. It is very difficult to give exact information as to what a person can or cannot do with or without a high-school education. Nevertheless it is possible to say this much. A person who does not have a high-school education would find it difficult in the future to succeed in a large way in any of the occupations of the following workers:

dairyman	manager	advertiser
florist	manufacturer	auctioneer
nurseryman	publisher	commercial traveler
fruit-grower	watchmaker	demonstrator
gardener	aviator	bookkeeper
poultry-raiser	conductor	commission merchant
builder	freight agent	floorwalker
chemical worker	garage-keeper	grocer
compositor	locomotive engineer	motion-picture operator
contractor	mail-carrier	musician
engraver	station agent	sculptor
foreman	wholesaler	artist
insurance agent	constable	illustrator
promoter	detective	decorator
real-estate agent	policeman	nurse
salesperson	draftsman	photographer
ticket-seller	inventor	hotel-keeper
ticket agent	signalman	cook
undertaker	traffic manager	stenographer

When graduation from college is needed. College education besides is necessary for a number of occupations, though, of course, in some cases the training will be broad and gen-

eral, while in others it will be specifically related to a definite calling. The following list is composed of those occupations which in the future should rarely be undertaken without college preparation:

accountant
actor
architect
assayer
author
banker
broker
buyer
chemical engineer
chemist
civil engineer
clergyman
dentist
designer
editor
electrical engineer
employment manager
exporter
hydraulic engineer
importer
inspector
labor manager
landscape architect
lawyer
lumberman
mechanical engineer
mine-owner
mining engineer
oil-well operator
physician
probation officer
professor
reporter
sanitary engineer
secretary
sheriff
social worker
statesman
statistician
stock-raiser
surgeon
surveyor
teacher
theatrical manager
veterinary surgeon

Now turn to page 2 and look at our diagram. We want you to notice particularly that we have been talking throughout this chapter only about column 4. It is an entirely different story, and in some cases a much more impressive one, to argue that high-school or college education is needed for citizenship, leisure and recreation, culture, ethical understanding, and all the rest. If we have failed to make clear the importance of education in other directions than vocation, it is only because this book is devoted more especially to the vocational aspects of school work.

EXERCISES AND PROBLEMS

1. Can you talk with a few workers who need to know foreign languages in connection with their work? See whether you can find out the use of knowing just a few words or expressions in a foreign language. Also find out, if you can, about some instances where a great deal of knowledge of a foreign language is necessary.

2. If the peace of the world depends upon proper balance in the occupations of various countries and upon the right conditions in

international trade, what has this to do with the study of languages in high schools and colleges?

3. Give an account of several workers who use music constantly. Describe the work and tell its advantages and disadvantages.

4. Give instances to show the need for information about hygiene and physical education in connection with one's job.

5. Is gardening important as a high-school study? Give the reasons for your answer.

6. Are you handy with tools in the home, and have you proved this by real helpfulness to your mother or other persons? If so, describe your experiences. Should instruction in the use of tools be offered in high school?

7. Should one go to college if he can get into his occupation without a college education? Give reasons.

8. Investigate some of the workers given in the first list above, to see whether they obtained a high-school education. If some of them have not a high-school education, is this a sure sign that future workers will not need one? What do the workers themselves say about the need for high-school work?

9. Investigate some of the workers in the second list and see whether they have received a college education. What do they say about the need for such education both in the past and in the future? Give your own conclusions.

10. Choose an occupation in which you are especially interested, and discuss the educational plans which you would need to make and follow out for the kind of success in your occupation which you wish.

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Bulletins of high schools and colleges.

Textbooks in all your studies.

CHAPTER IV

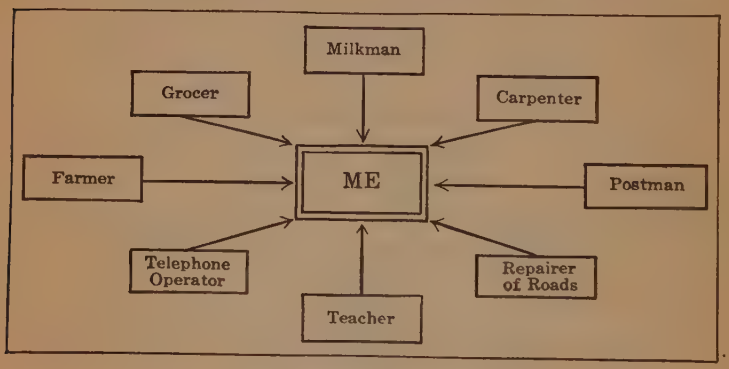
VOCATIONAL CITIZENSHIP

We depend on each other. Everywhere you go in life, citizenship and coöperative relationships will be with you. It is nonsense to talk about a "self-made man," for no person can possibly get along without the helpfulness of multitudes of other people. A favorite illustration shows coöperation: Make a list of the number of persons who help to make a loaf of bread. Perhaps forty or fifty people are engaged in the process, and thousands more if you study the making of the machines which are used to gather the wheat and to make the bread. The same illustration is true about the success of a man. It is true of you at the present time. Your job is going to school, and while you are at work on that job scores of other workers are helping you.

Your work in life is to develop services worth while, so that you will fit into the economic scheme of things. Your own success is to be built on the effective serving of others. No citizen can "go it alone" in vocational life any more than in civic and political life.

As you go about in school and in life you will be doing things which other people require to have done but do not do for themselves, and they, in turn, will be helping you by means of the particular activities they carry on. This mutual relationship is often called division of labor. In earliest times, when there were fewer villages and no cities, every family had to wrest its own food from nature, secure and prepare the raw materials for clothing, and make this raw material up into garments. Every family built its own house, constructed its own cooking implements, and built its own beds.

How the division of labor works. A balance is always required in life between work and needs. Suppose the world needs trees: workers must meet the need. If the need is for pencils, a worker must make them. If you of the next generation should all decide to become salesmen, who would produce the things to be sold? If you should all decide to live in cities, who would run the farms and raise the food?



HOW WORKERS HELP ME

The experience of Russia since the war indicates something like early primitive life, the kind of existence which might be ours if the division of labor were broken up and the coöperative relationships we have described above were disrupted. During the war many of these difficulties were manifest. Education was interrupted, libraries and churches were closed, streets were not cleaned or sprinkled, certain necessary articles were extremely hard to obtain, and there was no time or opportunity for reading, music, art, recreation, and many other valuable things in civilized life.

You will see that if you are to choose your own occupations wisely and at the same time supply each others' needs, you will need a high degree of intelligence. Suppose one of you decides upon an occupation which is unsocial or unethical: he will then prosper at the expense of all the rest of

you. Whether his choice is deliberately or ignorantly made, the effect will be the same. Thus the effort he makes, the food and clothes and other goods he uses up, will be wasted so far as the progress of civilization is concerned.

The modern industrial organization is dependent upon intelligent, voluntary, harmonious coöperation on the part of all the people. It requires that the people shall distribute themselves according to choice in the various industries, and so direct their individual policies as to keep the industries in balance and accomplish a ready exchange of products. If through mistaken ideas of self-interest they organize themselves into groups, either national groups, class groups, or occupational groups, and become so intent upon forwarding group interests that they lose sight of the necessity for general coöperation, the whole modern system of highly-developed industry will break down. . . . It is wrong that great numbers of people should be so ill-informed about economic affairs that, instead of acting in a manner calculated to secure coöperation and stability, they use their influence to break down the delicately balanced industrial organization and create confusion and disorder.

The above quotation is from the monthly bulletin of the National City Bank of New York, and describes very well the higher order of vocational citizenship necessary to make the division of labor a success.

EXERCISES AND PROBLEMS

1. Make a list of the workers who help support you. Perhaps you would like to put this list in the form of a diagram.

2. Select an object requiring many workers, as a dress, ship, house, automobile, stove, or loaf of bread. Draw it in the center of a sheet of paper, with plenty of room in the margin, or on a page of your notebook. Then surround the object with the names of the workers who help in its making.

3. A number of separate processes are involved in the repair of a punctured tire or in washing dishes. List the processes in one such project and discuss the question of having separate persons for each.

4. Think over some of the disadvantages involved in the division of labor and prepare a discussion on this topic for class.

5. Which would be more serious for society, having too few farmers or too few salespersons? What civic problems are involved in such questions?

6. What would happen if all the pupils now in school should choose just what occupations interest them without regard to human needs? Give illustrations.

7. Stage an imaginary conversation with a boy or girl who thinks that he can achieve his success without regard to other people.

Institutions maintained by workers. Not only must there be a careful and harmonious division of labor; there must also be organized a number of institutions, aside from government institutions, through which civic relationships may be maintained. For example, every large store or factory is incorporated, and this incorporation means that a group of people have set up an organization with a statement describing the aim of the establishment and how it is to be managed. This statement is called a charter, and must be obtained from the secretary of state of the particular state in which the organization is created. The granting of this charter allows the company to proceed with its business and protects it in its work. It thus becomes somewhat self-governing so long as it obeys the laws; indeed, every city has hundreds of these corporations all interlocked in industrial and commercial relationships for the common good. The secretary of state is not allowed to grant a charter to organizations which act against the public good, and he may revoke a charter which is misused.

The workers too maintain organizations. You know what we mean by parliamentary law; namely, the rules for conducting meetings, as developed originally in the Parliament of England. The workers' organizations are usually called unions; but they are parliamentary organizations, each with its constitution or charter describing its purposes and outlining how it is to be controlled. In this chapter and the next we shall describe organizations of companies and workers and show how city, state, and nation are concerned with them.

Human relations in industry. In the old days, when everything was relatively simple, the employer knew all of his workers personally; now he may never see some of them, and it becomes necessary to have definite understandings for carrying on friendly relationships. Suppose, for example, an automobile factory employs twenty thousand workers. It is clear that you cannot put twenty thousand workers together without having all sorts of problems arise. If you could place these men from the Atlantic to the Pacific a quarter of a mile apart, each with his own farm, there would be little need of rules and regulations; but when they come together in one factory, all sorts of questions arise. For example, Who shall do the hiring of John Jones? How shall Jones be trained for his work? How much shall he be paid? Upon what grounds shall he be discharged? How shall we care for him in case an accident happens? What shall we say to him about smoking, rough language, scuffling, tardiness, and absence? Under what conditions shall Jones be allowed to use machines? What shall we do if he is wasteful? Who shall direct him in his work? What shall we do with him if he cannot speak the English language? What shall we do if he has such a poor place to live in that he cannot sleep well or keep healthy? Shall we take any interest in his children, to see that they have good schools? These and a host of other similar questions arise and demand solution. Questions of this sort grew so big during the time of the World War that the government was forced to establish better relationships between management and men. As a result many companies introduced an officer who was called employment manager, labor manager, or personnel director.

Some progressive corporations. Let us describe some of the situations which were solved by progressive companies, in most cases several years before the war. In one of the Boston stores, almost twenty years ago, a plan of employee representation was inaugurated. By gradually increasing the powers of the Filene Coöperative Association, the organiza-

tion of its workers, this store has now reached the point where not even a higher officer of the store can discharge a worker without the right of the employee to secure a hearing by a committee of fellow workers. This committee, after hearing the evidence, has the right to discharge him or reinstate him in his original position. These workers, like those in many other stores, publish a weekly paper, manage a coöperative lunch room, maintain orchestras and debating-clubs, and provide dances and entertainments. Any dispute can be arbitrated by committees from within the company.

A Chicago clothing factory, after a long and bitter strike, started a plan providing for what is sometimes called constitutional government in the clothing industry. Under this plan the union representatives and the company representatives select an impartial chairman who is empowered to decide cases of dispute between the workers and the company.

Many companies have secured the coöperation of their workers in deciding on questions of wages. For example, nine thousand employees of the Pullman Company in 1920 voted to accept a 20 per cent wage reduction in view of the changes in the cost of living, which at that time were downward. Many similar instances occurred during the same period. A Boston paper said, "The spectacle of some thirteen thousand employees of the General Electric Company at Lynn agreeing to a considerable wage reduction, through negotiations handled by their authorized representatives, is both an unusual and a reassuring one." The International Harvester Company has for some years maintained an industrial council which is governed by a joint board composed both of workers and managers seated together around a table and voting on company policy. Recently committees from the various departments of this company revised for the corporation its entire wage system.

One of the most interesting and progressive companies is the Philadelphia Rapid Transit Company. The coöperative-management plan was organized after a long period of struggle, during eight years of which the stockholders received no profits on the money they had invested in the company. The new manager called a meeting of the employees, explained the exact financial situation, and asked them to appoint committees to help him in making the company efficient. As a result, in a few years' time the Philadelphia street cars were carry-

ing over twice as many passengers with fewer employees. Under the old management the cost of accidents was $7\frac{1}{2}$ per cent of the money paid for fares; under the new management, $2\frac{1}{2}$ per cent. When the new management was threatened with being outvoted by some dissatisfied stockholders, who intended to abolish the plan, the employees themselves first agreed to lend a million dollars of their own savings to the manager, and finally themselves bought stock in the company and elected a representative to the board of directors.

CLOTHING WORKERS IN A MODERN FACTORY

Courtesy of B. Kuppenheimer & Co.

Another company, the Dennison Manufacturing Company, has recently been working on the problem of protecting the workers in their positions. The salesmen of the company first rearranged their sales so that Christmas goods could be produced and shipped all the year round. Committees of the workers and managers then devised a plan for shifting the employees from one department to another in case of need. Finally, a sum of money was saved up for paying out to the workers a share of their wages when there was no work for them in the factory. The plan is still experimental, and some persons think that the state itself will have to furnish this protection against unemployment, rather than each company separately. Many companies are selling their own stock to the employees, and a restaurant

manager in California has a series of cafeterias in which the workers own 95 per cent of the stock. His companies are exceedingly profitable, because all the workers own stock in the business and therefore are interested in making it a success.

Some interesting unions. There is a wide difference among the different kinds of unions, and much dispute too. In England the unions have organized what is called a Labor party, and its representatives sit in Parliament, just as our Democrats and Republicans are in the House of Representatives and the Senate. The American Federation of Labor is founded on the organizations of separate unions in various trades distributed all over the country. Thus, the printers in almost every city have their unions, and these are united in a national organization, which in turn is a part of the American Federation of Labor. These unions and the Federation itself have their own magazines, annual reports, and conventions, and naturally enough they support each other in strikes when these strikes have been properly authorized. The officers of the American Federation of Labor are often called into conferences by city, state, and Federal governments, and members sometimes serve on advisory boards for vocational education. The Federation has offices in Washington and has many agents studying labor problems.

An interesting union is the Amalgamated Clothing Workers of America. It has members from 27 nationalities, with 148 local unions, and it has coöperative agreements with employers in 36 cities, in 14 states, and in 2 Canadian provinces. It publishes weekly, biweekly, and monthly papers in English and several other languages, conducts its own research department, owns its own buildings in New York, Philadelphia, and Chicago, and runs two banks. Its members contribute two dollars a month to the organization. Its latest exploit is the establishment of clothing factories in Russia. The educational work of the Amalgamated Clothing Workers of America includes classes in English, public speaking, economics, labor sociology, psychology, modern civilization, current events, history, etc., besides a series of lectures and various publications.

EXERCISES AND PROBLEMS

1. Do you know of an incorporated company in your neighborhood? If so, find out its purpose and, if possible, obtain a copy of its by-laws. Report your findings to the class.

2. Do you know of a personnel manager or employment manager or a foreman in a factory, store, or shop? Interview such a person to find out about his work, and report to the class.

3. Investigate any industrial or commercial establishment so that you can describe the relationships between the employers and the workers.

4. What are the satisfactions in working for a progressive establishment? Prepare a discussion of this topic for class.

5. Prepare an argument on the relationship of labor and politics. Give your conclusions on this question.

6. Talk with a member of a union about his work and report your findings to the class.

7. Plan and carry out before the class an imaginary interview between a union man and an employer. Demonstrate how the union works.

8. Four students may arrange a debate: *Resolved*, That the growth of unionism has been a benefit to the country.

The history of these problems. We ought to be hopeful about most of our labor questions, because they have arisen rather suddenly out of the wonderful inventions recently made. The enormous problems in the field of industry have developed out of the growth of the factory system. In 1800, and before, each worker owned his own place of business, bought his own materials, owned his own tools, and had as a rule a high degree of skill. Perhaps you know the story of Silas Marner and how he wove cloth in his home. This was common practice at the time of the Revolutionary War and for a few decades thereafter. Shoemakers even traveled about, working in the homes of their customers and carrying materials and tools with them. After the discovery of the application of steam to furnish power, say from 1820 to 1850, men of larger foresight owned materials, power machinery,

and the small buildings in which the power was applied, although the workers still owned their hand tools. Before many decades, however, tools began gradually to change into machines: the hammer became the steam hammer; the hand saw, the circular saw; the brace and bit, the drill press; the cobbler's bench, the lasting-machine; and the jack plane, the planer. The worker came without any tools; all he had was his strength and his skill of hand and head. It may be fairly said that these two things—strength and skill—were all that the worker owned; the manager or capitalist owned all the rest—tools, power, building, equipment, materials. This period may roughly be dated as 1850 to 1900.

During the early part of the present century a new problem arose which is often described by the name "scientific management." This expression means only efficient management, but it has a special method of working, and this method emphasizes the division of labor by breaking up such a task as making a shoe into one hundred and fifty or two hundred simple processes, each of which is given to a separate man. Detailed directions are then given him, and his work is carefully supervised, timed, and measured. Clearly the worker in many industries has now become almost machinelike in his operation. Instead of skill he has mere quickness or dexterity, since the skill has been standardized by the foreman, superintendent, and general manager and has been described in written directions for him to follow. Clearly, also, his strength has become relatively unimportant, since heavy work is done by the machine.

Our description is not true of all industries, and many workers will still need a high degree of skill and strength. Nevertheless, where division of labor has taken a scientific-management form, new problems are created. Here is a man in a shoe factory who pounds nails into heels all day long. He has two kinds of nails, one kind in either cheek. What shall we do to secure a good vocational citizenship for him? Since it is obvious that we must have shoes, automobiles, and

the rest made on the wholesale plan, we must give the worker every opportunity to use his mind in other ways if not in his actual handwork so that his life may be unimpaired. He must study the economics of his work, organize associations with his fellow workers, help to decide on rules for safety in working with the machines, carry on recreational activities, and interest himself in standards of workmanship, wage rates, improvement of machines, and other such questions.

Making industry harmonious. Some of the objectors to the modern wage system maintain that the interests of labor and capital have nothing in common and are, in fact, completely antagonistic. Another group of people assert that the interests of the capitalists and the workers are identical; that is, that when the owners prosper, the workers will prosper. The theory is that if the workers will all produce as much as possible, their own prosperity will be assured.

Probably neither of these explanations is wholly correct. The interests of labor and management are identical in this, that both of them are prospered by keeping things going. If the factory is closed through lockout, strike, depression, or other calamity, both will suffer. Harmonious relationships ought first of all, therefore, to be founded on an agreement for keeping the factory wheels turning and furnishing employment the year round. After this much is agreed upon, the other details must be worked out by coöperative agreements such as we have described. In these agreements, no doubt, men's selfish interests will clash and more righteousness and more intelligence than we have at the present time will be needed before anything like complete harmony is possible. All workers, owners, and managers who are worthy to be called American citizens will sit down together to work out better methods. You of the next generation, it is hoped, being better instructed in these matters, will devise better plans still. The real reason for coöperation is that our people have wants to supply, that Europe needs our help, that our farmers must prosper, and that you of the next

generation should have these matters of material welfare, supply, and demand better ordered, so that you may be free from danger and dispute and thus be able to give attention to the more important things of life. When America started on her experiment of universal education, she started a social system that requires mutual understanding and coöperation.

Sir John Pilter, honorary president of the British Chamber of Commerce in Paris, recently made some interesting declarations concerning the relative interests of capital and labor, and his statement summarizes points necessary to consider in working out better methods. He says:

I would ask Labor to consider the following points:

1. Labor without Capital is practically powerless.

2. Labor can only produce when Capital has placed in its hands the raw material and the tools with which it can produce.

3. The tools or plant must be kept up to date; any improvement that allows increased production or improved quality must be adopted at once; Capital alone can do this.

4. The advance purchase of raw material absolutely necessary to a successful enterprise can only be accomplished by Capital.

5. Bad debts, bad seasons, bad crops, mistakes, occur in every occupation. Labor can stand no loss. Capital must be there to weather the storm.

6. Capital can alone obtain credit.

7. It is only fair that Capital should have a living-wage as well as Labor.

I would ask Capital to consider the following points:

1. Capital without Labor is powerless to produce.

2. It is only by the willing and ever-present coöperation of Labor that Capital can obtain the full output of the plant it provides.

3. Labor alone can avoid waste of material and waste of time, and by so doing can more than recoup the share of the profits given it.

4. Labor alone can care for the machinery with which it works.

5. The quality of the goods produced is largely dependent on Labor.

6. Only by the close coöperation of Labor can a low-cost price be obtained.

7. The entire and confident reliance on Labor would be the greatest source of tranquillity and prosperity that Capital could obtain.

EXERCISES AND PROBLEMS

1. Describe a shop in your neighborhood in which the worker owns the place, the materials, and the tools. Tell how the plan works out.

2. Describe a factory in which the workmen own none of these things. Tell who owns them and describe the working-out of the plan.

3. Read over the statement of the first and second exercises above and discuss the question of large factories versus small factories. What are the advantages and disadvantages of each?

4. Arrange with another student to have an argument on the relative merits of the plan in Exercise 1 and the plan in Exercise 2. Discuss with each other beforehand the questions involved and come to class prepared to make statements on the two sides of the question.

5. How did the discovery of steam affect the size of factories? Explain how this happened.

6. Do you know of any factory worker who performs just one motion or operation all day long? Describe his work, if possible, in terms of his own experiences.

7. What recreation facilities are provided in the factories and stores of your neighborhood?

8. Give some reasons which show why workers and owners must coöperate.

9. Stage an interview between a manager and a worker. Demonstrate how an agreement may be worked out.

How enterprises are organized. The purpose of industrial and commercial enterprises being to supply human needs, let us now discuss the question of organization. Notice how much this resembles the coöperation of citizens for government purposes.

In the first place, long study is necessary before anybody can do a stroke of physical labor. The men about to undertake a new enterprise must study the needs of mankind, and this study must be turned into particular channels, corresponding to the resources of the particular men who are at work on the problem. Suppose, for example, a group of men associate themselves together to study the manufacture of rubber products. They include, let us say, somebody who

knows intimately the geographical questions connected with the rubber supply; another person who knows very well about financing the enterprise; a few men who have sufficient funds, which they wish to invest in the business; engineers who know about machinery, manufacturing processes, factory construction, labor problems, etc.; and others who understand about marketing. Can you not easily see that even to get such a group of men together a great deal of labor is necessary, and that this ability must be paid for? Possibly these men we have described got together through the interest of the man who knows the raw material and wishes to create a market for this crude rubber. Or, more than likely, some bankers or other financial persons having money to invest searched about till they found the rubber man, and then the others were added to the group. In any case the group must be formed, and many preliminary meetings are necessary to work out a host of details before an actual organization can be formed. When sufficient progress has been made a charter is usually applied for, with the advice of a lawyer, and the enterprise incorporated.

All the foregoing operations are of course in a very real sense work, and it might be possible to figure actual salaries for the men who carry on these preliminary arrangements. The lawyer has his fee, the engineers must be paid, the expert financial advice must be compensated, and so on through all the other factors. But there are two elements which are difficult to measure in terms of wages, and these are, first, the interest on the money to be invested in the enterprise and, second, the profit which the stockholders hope to obtain on account of the risk involved in their enterprise. We shall for the present pass over these questions of interest and profit, to take them up again later in the book in our chapter entitled "Vocational Economics." Let us assume, then, that the enterprise is incorporated through its charter and that those who furnish the capital are given shares of stock to represent their investment. These stockholders will then meet

and choose a board of directors, which determines the general policies of the company; for example, what products shall be manufactured, how the finances shall be arranged, who shall serve as the chief officers, and how the gains or losses shall be distributed or assessed. The officers whom the directors elect may then organize as a board of managers, which board is under the general control of the directors. The directors are likely to meet not more than once a month, or even each quarter, and to serve without regular salaries. The managers, on the other hand, are often in daily conference and serve under regular salaries. The factory now being organized is ready to operate, and we shall pass next to the plan of operation, which we have diagramed on page 62.

How the factory is run. Let us suppose that our board of managers is composed of five members: one for buying, one for maintaining the working force, a third for managing production, a fourth for handling the finances, and a fifth for marketing the goods. We shall discuss briefly each of these men as they appear in a typical establishment.

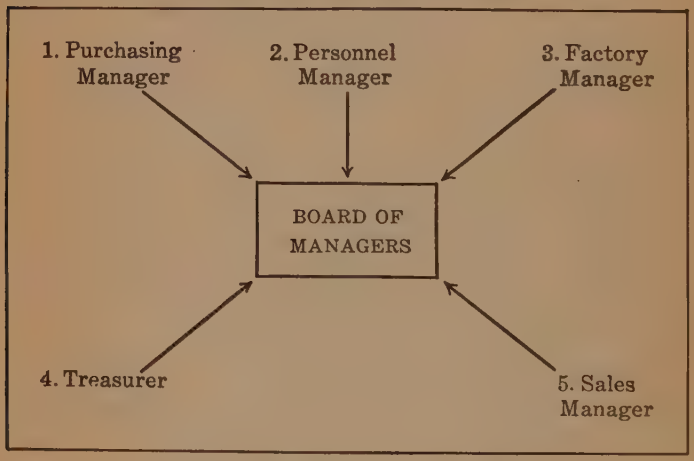
1. *Purchasing manager.* The buying is done by the buyer or purchasing agent, who goes out or sends his agents (sometimes to the ends of the earth) to get the rubber, cotton, chemicals, and other products necessary for the factory. He must supply goods so that there shall be a regular flow of raw material to the various departments of the factory.

2. *Personnel manager.* The employment manager, labor manager, or personnel manager must hire workers, see that they are trained for their jobs, take care of their safety and general welfare, provide a lunch room if necessary, educate the foremen in the handling of help, and in every other way provide for harmonious and efficient workmanship.

3. *Factory manager.* The general superintendent, factory manager, works manager, or production manager (all these various names are in use) is in charge of the actual factory work. He is responsible for the routing of orders through the factory, maintains a planning department for the filling of orders, instructs the foremen as to the kind of workmanship required, and sees that the necessary buildings are built and that the proper machines are installed and maintained.

4. *Treasurer.* The treasurer, comptroller, or auditor is the man who handles bills, keeps account of costs, pays for the raw material, collects bills, and attends to insurance, mortgages, bonds, rents, interest, and other financial matters.

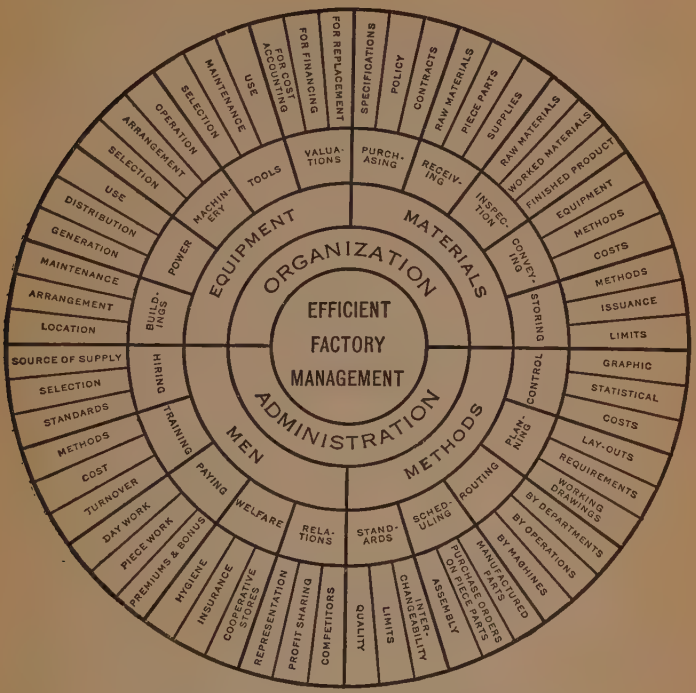
5. *Sales manager.* The marketing of goods is handled by the sales manager. He must be a person who knows the needs of people in various localities throughout the United States or the world. He sends out letters and agents to help him in this work, and he has charge of advertising and other methods of publicity.



THE ORGANIZATION OF A FACTORY

How these managers coöperate. At the daily meetings of the board of managers each member presents his problems. The meetings may be under the direction of the president of the company, who may be elected from the board of managers or may be a person chosen by the board of directors to act as a coördinator of the work of the factory. In any case it is quite unlikely that any one man will have complete control of the company. Some men dominate through their force of character, enthusiasm, experience, knowledge, or financial resources, but such cases are becoming more and more rare—and for a very simple reason. The complexity of

modern business is too much for any one head. As a general thing those companies prosper best where the president or any other officer can be outvoted by his colleagues on the board of managers.



THE MANAGEMENT OF A FACTORY

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Suppose the sales manager brings a problem to the meeting of the board of managers. He complains that deliveries are slow—that certain stores have ordered rubber shoes for summer trade, and that it is now July and they are telegraphing in angry protest. He asks the factory manager why he did not get the goods through faster and deliver them

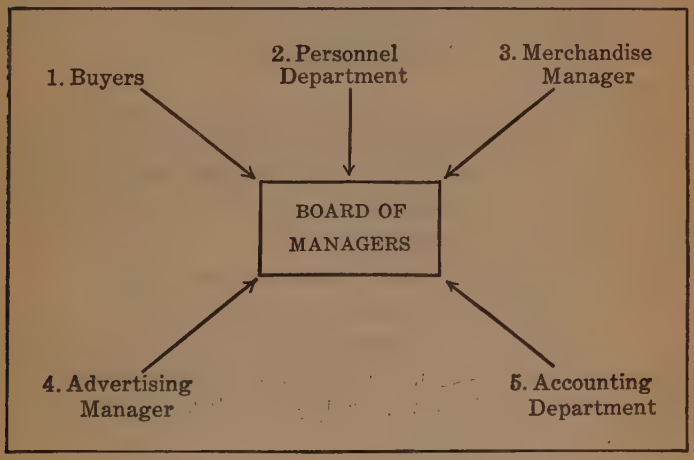
promptly. Perhaps the factory manager claims that there was a shortage of raw material and therefore turns to the buyer and asks him what is the trouble. Possibly the buyer makes a satisfactory explanation, referring, for example, to the impossibility of getting the right materials on time; yet this leaves the problem for the retail stores still unsettled. The board of managers may then agree to instruct the treasurer to offer a special discount to the stores in case the goods are longer delayed.

Thus, you see, the meeting of the board of managers is for the purpose of working out problems coöperatively. Each member brings his problems to the common meeting, and, instead of "passing the buck" behind each other's back, they debate and discuss the troubles and difficulties and new projects and decide by majority vote. Then at the close of each meeting they go back to their own departments and there carry out the plans which have been decided upon. A good way of stating how a factory is run is to say that important policies are decided upon coöperatively, while the execution of these policies is carried on by each manager in his department.

The organization of a store. Since a store distributes goods instead of manufacturing them, the store managers are usually described in different terms. The diagram on page 65 will indicate the names of the five departments which are common to the work of a store, and the names themselves will indicate the kinds of work these departments carry on. Their coöperation is exactly the same as that described above.

Divisions and departments and subdepartments. Of course, in smaller or larger stores or factories various functions described above may be combined. Thus, in a store it is quite common to combine the merchandise manager and advertising manager in one person. Again, subdepartments may be organized, especially in large enterprises. For example, the merchandise manager may have such subdepartments as stock-keeping, marking, selling, and delivery.

Are these methods the best? We have now discussed various forms of "citizenship in industry," showing how relationships and institutions are maintained, describing certain progressive experiments now being carried on by certain corporations and unions, and outlining the manner of organizing factories and stores. Are these methods the best methods that can be used? We think that no one can give a



STORE ORGANIZATION

definite answer to this question. They seem to be the best that we of the present generation know about. If these civic institutions were suddenly destroyed, chaos, suffering, and death for millions of men and women would result, and the children of the next generation would undoubtedly suffer first. Nevertheless, many new ideas and actual experiments may teach you new methods. You must be open-minded toward all honest and sincere attempts to discover new ways of doing things. We believe, however, that these new methods will usually be found to be an outgrowth of the old, and that the best way to bring about changes, where changes are needed, is through a study and careful working-out of the

best methods of the present. If capitalism and the wage system are finally to be superseded by something else, this can come about only on the basis of common understandings which are worked out under the present system of production.

EXERCISES AND PROBLEMS

1. Study the management of a corporation in your neighborhood and see how its different departments are organized.

2. Describe the work of the purchasing department of a corporation.

3. Describe the work of the personnel department, or, if the establishment does not have such a department, investigate how its workers are hired and cared for, and make a report on your findings.

4. Discuss the work of the factory manager or general superintendent of the factory or store.

5. Describe the work of the treasurer of a corporation.

6. Describe the work of the sales manager.

7. Make an investigation of the way goods go through the factory or store from start to finish, and show how the various departments must coöperate. Is there a general coördinator or president who supervises this coöperation?

8. Do you know of ways in which the organization of stores, factories, or mines is changing or can be changed for the better? If so, give instances and explain your reasons to the class.

9. If a person learns to coöperate successfully in a store, shop, or factory, will this help him to be a better citizen? Make out a list of definite ways in which this coöperation will be helpful.

10. Stage a conference of five or six officers of a company, demonstrating how a problem is worked out.

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CHAPTER V

VOCATIONAL COÖPERATION

We have discussed in the preceding chapter the charters which are issued to industrial and commercial corporations, as well as some methods of coöperation between labor and capital. We have now to consider four other questions connected with occupational life: (1) voluntary coöperative establishments; (2) coöperation as carried on by government ownership and management; (3) government regulations; and (4) plain, everyday coöperation between industrial and commercial companies and their customers.

Voluntary coöperative associations. Suppose a group of your fathers and mothers, living in a certain neighborhood, should decide to own their own grocery store. They would hold many meetings to work out the details of the plan, and would then find the building and hire a manager and furnish the money to run the store. Thus the customers would own the grocery store, and the manager would be under their direction. In England and other European countries there are thousands of these "coöperatives," and a recent list gives the number in this country as over twenty-three hundred. Regardless of the number of shares of stock in which any one person may invest, the management is kept democratic by giving each person only one vote. Usually the members of the coöperative are given a special discount on goods purchased, whereas other customers are charged the current retail rates. In England the coöperative stores have themselves joined in a huge association which owns its own wholesale houses at strategic distribution points, and has even bought ships, farms, tea plantations, and other important means of production and distribution.

This, then, is another experiment which must be put alongside the chain store, the neighborhood store, the mail-order house, and the department store before we can find out whether or not all of them are necessary and whether certain ones will serve the public best.

The farmers' coöperative associations are very well known in this country, and we doubt whether any foreign country has developed such extensive coöperation as have the orange and raisin growers of California, the dairymen, and the growers of apples, melons, wheat, and corn. These farmers' associations have protected the farmer by advising him as to the size and character of his crops, furnished him with raw material at cost, and taken over the perplexing problem of marketing his goods. They have also protected the customer by standardizing and labeling the different grades of oranges and apples and by furnishing better containers, more careful refrigeration, sanitary handling, etc. The grower takes his goods to a nonprofit packing-house, creamery, or warehouse, in which he is financially interested and which he helps to control. Here his goods are graded, cleaned, labeled, processed, packed, shipped, cooled, and wholesaled, and he may be assured that he will receive the fullest possible return on his money. Such standards are often enforced by state legislation.

So far we have discussed voluntary coöperative associations, in which the government takes no financial responsibility. But sometimes the need for coöperation becomes a political issue, and a majority of the voters forces the government to buy, organize, control, and manage. Thus, in North Dakota the grain-growers attempted a voluntary coöperative association, but so much opposition arose that they went into politics with their plan, as the Non-Partisan League, and finally elected officers and representatives pledged to carry out a state plan of grain elevators (warehouses) and a government plan for financing and marketing the grain. This situation illustrates a condition of affairs which has arisen at Washington as well. The men in Washington who represent the agricultural states have held meetings together to talk over legislation as it affected the farmer, and have sometimes, regardless of their political affiliations as Republicans or Democrats, voted together. They have been referred to as the Farmer's Bloc, and many wise statesmen have looked with disapproval on their political affiliation and coöperation. It is clear, nevertheless, that many occupational questions of this nature are bound to be reflected in the political affairs at Washington.

Government ownership and management. We remarked in Chapter IV that most people are agreed that roads, schools, and post offices should be managed by our government, but that many people are opposed to the extension of such government action. In order to understand this problem better, therefore, let us study somewhat the problem of how the government at present manages its occupational affairs.

Probably the biggest job the United States ever undertook was its participation in the World War. It is conceivable that most things connected with the war might have been let out by contract to private corporations. Our ships, shells, airplanes, uniforms, hospital supplies, and many other such products for the war were indeed produced largely by individual companies, while at the same time England produced most of these things in government-owned factories or at least those under government control. When we built the Panama Canal we did not have bids, but we did the job under our own officers. In building sewers, keeping our streets clean, putting out fires, supplying water to our citizens, caring for our parks, and many other things, we let our city government, under the direction of its elected officers, own and manage all these enterprises.

We might buy our water of private companies just as we usually buy electricity, gas, and street-railway transportation from such corporations. Indeed, many cities still do not own their waterworks. On the other hand, some cities own their street-car lines, and many places own and manage gas and electric-light works. Cities usually hire out all the city printing, whereas many states have their own printing establishments, and the Government Printing Office at Washington is the largest printing establishment in the world. Our post office is sometimes called unsuccessful because it has a deficit, but under private contract it is an open question whether letters could be sent so far for two cents, and whether the service in general would be as efficient.

Whether or not the public should own and operate colleges is still an open question. The government at Washington, in coöperation with the states, maintains forty-eight agricultural colleges, but the states are about equally divided on the question of having state universities for general education.

In all these government enterprises it is important to have the competition of individual initiative going on at the same time. Thus, it would be a mistake to force everybody to go to public schools and colleges and a great deal better to allow experiments representing different ideas in education to go on side by side. It would be unfortunate for the government to declare a monopoly in education, fire control, letter-carrying, or anything else except where there might be positive danger or great inconvenience to the public.

During the war the government had control of the railroads, and it is still a disputed question whether or not, on the whole and in view of all the difficulties, this was a success. Whenever difficulties occur on the railroads or in the coal mines many people advocate government ownership as the cure. Other, more cautious, persons hold that we are not yet intelligent enough to carry on such extensive government enterprises,—that government officials are not efficient, and sometimes not as honest as they might be. A well-informed college professor recently remarked that for every instance of corruption or dishonesty in government one could find an equal instance in business. This remark illustrates the fact that both business and government represent what humanity is, and these manifestations of humanity's character and ability—namely, businesses and congresses—are just about as good or bad as humanity in general. The institutions of mankind are not much better or worse than the average citizenship. These questions of railroads and coal will, therefore, be settled only by an improvement of our citizenship, and the question of private or public control is not, after all, the most significant question.

EXERCISES AND PROBLEMS

1. Do you know of a coöperative association? If so, describe its work.

2. Discuss some of the difficulties involved in securing coöperation among farmers. Do you think they have coöperated because they have been forced to do so or because of their interest in improving their condition?

3. Discuss some of the differences between voluntary coöperation and government coöperation.

4. Are your schoolhouses built by contract or under the direction of the government? Which plan is best, and why? How about repairs?

5. Why is it that neither giving the railroads to the government to control and manage nor putting them back into private hands has made any great changes in methods of operation? What do you think is needed to improve the railways?

6. Discuss some of the difficulties involved in private control and management. What changes can be made to secure better teamwork between management and men?

7. Discuss some of the difficulties involved in government control and management. What suggestions are worth considering for improvement?

8. Stage an interview illustrating the work of a coöperative association or discussing government ownership.

Government regulation. Just as there is a question about government ownership, so there is a constant debate on the question, How far shall the government go in regulating the vocational acts of its people? One side welcomes every opportunity to establish standards enforcible by the government, while the other side wants it to do only what it is forced to do. Naturally our complicated civilization forces us to set up many regulations. Thus, if we go to a landlord to rent a house from him, we are not able, by looking the house over, to tell whether or not its beams and roof trusses are strong enough, whether the plumbing is well put together, the electric wires safe, the sewer laid at the right slant, and

the chimney safe from fire. It is necessary, therefore, to set up standards so that no one is allowed to build a house defective in any of these respects, and the rules of any American city for building houses, which are called the building-code, are long enough to fill this textbook.

Naturally enough, also, many workers need to be licensed, and in some cases examined, before they are allowed to do their work. It will not do to let anybody practice dentistry, medicine, or law without assuring our representatives in the statehouse that the applicant is prepared to practice those professions with due regard to the welfare of the public. Again, the architect, the electrician, and the plumber must be such persons as we can trust, and we must be protected from the person who might call herself a nurse and yet know the work imperfectly. You have heard the letters "C.P.A.," meaning "certified public accountant," a man or woman who is able to see whether a corporation is solvent or insolvent or whether or not it is using the best methods of accounting.

Should teachers be certificated? Obviously they should, so that children may be protected from those who have not studied for their work. Even peddlers must be licensed, and retail dealers and confectioners must satisfy public authorities that their places are sanitary and will be kept so. Automobile drivers, elevator operators, steam-fitters, aviators, postal clerks, garage-keepers, hotel-keepers, undertakers, auctioneers, butchers, bakers, and a host of others must be licensed and inspected and, in certain cases, examined.

Government protection of workers. Another kind of government regulation is the protection of women and children. In most states, if one is under eighteen years of age, he is not allowed to work between ten P.M. and five A.M., or at dangerous occupations. If he does he is violating the law, and he, as well as his parents and employer, may be prosecuted. In many states compulsory schooling is required up to the age of sixteen and through the eighth grade, and no one can take

a job which might in any way injure him physically or morally. In Massachusetts the following trades are forbidden to those under the age of eighteen, and the State Board of Labor and Industries has power to add to this list: tending blast furnaces; operating hoisting-machines; operating elevators running faster than one hundred feet per minute; oiling or cleaning hazardous machinery in motion; polishing or buffing wheels; switch-tending, gate-tending, or track-repairing; work as a brakeman, fireman, engineer, motorman, or conductor upon a railroad; work as a fireman or engineer upon any boat or vessel; operating motor vehicles of any description; work in establishments where gunpowder, nitroglycerin, dynamite, or other explosives are manufactured; the manufacture of white or yellow phosphorus or phosphorus matches.

In many states women are not allowed to work at night or more than eight hours in the daytime. This is asserted by some people to give an unfair advantage to other states, and an interesting result is the coöperation of the cotton manufacturers and the unions in Fall River, Massachusetts, to bring about a national law making the forty-eight-hour week a maximum working-time for the cotton and other industries. There is at present a great deal of variation in all these laws among the various states, but whether national control is the solution has not yet been determined.

There are elaborate government regulations for railroads and steamships. You probably know of the Interstate Commerce Commission and the Railway Labor Board, and even with this regulation it is apparent that there will be trouble in our transportation problem unless more careful regulations are worked out.

Investigation needed. As you enter into occupational life you must do more and more studying and must support in every way possible all forms of investigation which will give us the truth about these problems. Often newspapers are not trustworthy, because they are too much interested in one side

or the other. The editor may have stock in certain companies, or big advertisers may prejudice him. In connection with coal, for instance, it is clear that we need more facts than we can get now. Mr. Roberts, of the National City Bank, says:

> For years the curse of the coal industry has been the amount of idle time, and no one has shown how to remedy it. There are too many coal mines dividing the business, and too many workers dividing the work. It is difficult to see how any remedy can be provided, except by having the young men turn away from coal-digging and place themselves in other work. . . . That would compel more regular employment for the remaining miners, they would earn more wages at lower rates, coal would be cheaper to the industries and railroads and not only would coal be cheaper to the great wage-earning population, but everything else it consumes would be cheaper by reason of the lowering of costs in all industries and for transportation.

Mr. John D. Rockefeller, Jr., is quoted as saying that the miners' grievances are well founded and that the labor policy of the operators in fighting the unions is unwise and unjust.

One further duty falls to all of us who wish to be intelligent, and that is to know something of the common and important laws connected with occupational life. Unfortunately it is sometimes not very easy to find out what these laws are, but this condition of affairs will have to be remedied by brief and simple booklets explaining in simple language what the laws are, just as we now have such booklets on traffic laws for automobiles.

Everyday coöperation. Everywhere a large amount of coöperation goes on which is not regulated by the government nor prescribed by any law. Wisely managed establishments try to enlist the aid of their customers by telling them the truth in advertisements, and by advising customers on ways of saving money. Perhaps the best way to call to your attention the illustrations in your own mind will be to quote some mistaken ideas in occupational life and contrast them with the truth. One man tried to stir up trouble in connection with a textile strike. He failed to see any possibilities of

coöperation between the owners and the workers (a plan of coöperation eventually settled the strike, however). And so he talked as follows, in a public meeting, addressing himself to the president of the mill:

> Mr. ——, you made a serious mistake when you cut wages; you made a serious mistake when you thought the people are fools; you made a serious mistake when you thought they are slaves; and you made a serious mistake when you thought you could force them to live on sawdust. We don't care anything about your profits. We are dissatisfied with our wages and we won't stand any wage cut.

Clearly this kind of talk gets people nowhere: it leads only to disagreement and distress. It will settle nothing in occupational disputes.

Another form of coöperation is needed in connection with the people who come to us from Europe. The following reminders were issued by the California State Commission on Immigration and Housing as suggestions for Americans in carrying the spirit of America to immigrants.

1. Don't snub foreign people—make friends with them.
2. Don't laugh at their questions about American life—answer them.
3. Don't profit by their ignorance of American law—help remove it.
4. Don't distrust the foreign-born—make them trust you.
5. Don't mimic their "broken" English—help them correct it.
6. Don't drive the immigrant into financial failure—success makes for better citizenship.
7. Don't underrate his intelligence—he had brains enough to come here.
8. Don't call him offensive nicknames—how would you like that yourself?
9. Don't "Americanize" by fear and threats—"Americanize" by the square deal.
10. Don't make the immigrant hate America—make him love America.

By so doing you will strengthen America.

Another instance of coöperation is given in an advertisement issued by the Laundry Owners' Association of Greater Boston—an advertisement which gave a number of suggestions for improving laundry service. The advertisement states that the average driver makes two hundred calls per trip, one thousand calls per week, and asks what will happen if he has to wait five minutes at only half that number of places. By cutting down the cost of delivery, laundry prices can be lowered. The proper ways of wrapping bundles, counting, labeling, etc. are described in detail.

No doubt there is much selfishness in the world of occupations, and this is at the basis of our failure to coöperate. We shall therefore turn next to the question of right and wrong in vocational life. This will give us a better basis for the kind of coöperation required to make vocational life better and better.

EXERCISES AND PROBLEMS

1. Explain why we require peddlers, plumbers, electricians, teachers, and doctors to take out licenses.

2. Do you think that laws to protect women and children are justified? If so, why?

3. Choose a partner and discuss with him the question of government regulation and its difficulties. Prepare a discussion, one of you to give the argument for government regulation and the other the argument for the least possible regulation. Give the arguments before the class.

4. What is the purpose of laws requiring inspection? Do motion-picture theaters have to be inspected in your town or city? If so, why?

5. Should storekeepers and customers coöperate with each other? Can you suggest ways in which they can coöperate?

6. Should a garage-owner or the manager of an automobile repair shop favor good roads or bad roads? Why?

7. What vocational coöperation is necessary between citizens of the United States and subjects of other countries who work among us? How can school pupils help?

8. Are there any forms of coöperation in connection with vocations which can be made between workers in this country and those abroad?

9. Can you report on what is being done by any international organizations to work out standards for labor?

10. Stage a demonstration of coöperation between two or more fellow students.

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CHAPTER VI

VOCATIONAL ETHICS

Our interdependence. We have studied various forms of coöperation, and now we are to deal with the question of right and wrong in occupational life. There are two phases to the question—first, one's behavior toward the workers in other occupations and, second, one's behavior in his own occupation. Four boys who recently rang in a false alarm "just for fun" were certainly not very considerate of the faithful workers who serve in our fire houses and protect our homes from burning. The firemen drove so fast to reach the supposed fire that an engine was struck by a locomotive and badly damaged, and two of the men were seriously injured. The two older boys were required by the juvenile court to earn fifty dollars each by their own work before six months should have passed, the earnings to be paid to the injured firemen.

If we buy a loaf of bread or ride on a street car or purchase a suit of clothes or attend a motion picture,—whatever we do,—there are thousands of workers who aid us. If they could all be lined up to stand at attention and salute, they would form a vast army of workers. Both by our behavior toward the workers in other occupations and by our faithful service to those in our own vocation we are in duty bound, unless we wish to add to the selfishness of the world, to improve our standards of action.

Some approved standards in vocations. One writer on the subject of vocational ethics discusses the question of profiting at the expense of other people in this form:

> Do you want 100 per cent of the people of America to enjoy life, liberty, and the pursuit of happiness, in some degree comparable to

your own situation? Will you refuse to profit personally at the cost of your city, your state, or your country, even though scores of others are doing it? Will you take time out of your business, even at a loss to yourself, for the common good?—Dr. E. O. Sisson

You will see that an active goodness is necessary, as well as abstaining from doing wrong. Thus, Dr. Felix Adler, in discussing an ethical program for business men, expresses regret that of two college students who have grown up with the same ideals one upon graduation goes into teaching, the ministry, or medicine and does not think in terms of profit; while the other goes into business, talks profits daily, and is likely to acquire the cheap mottoes of the worse among the business men, such as "Buy cheap and sell dear," or the careless arrogance of "I am not in business for my health."

There is a great deal of controversy still over the war profits. We know from income-tax figures that during the war fourteen thousand new millionaires were created and that a large share of the money spent for the war went to them. Things happened so fast, however, that we are not yet sure where to place the blame, if there was any blame, and what to do about it. We know that business men were less selfish during this war than in any previous war, but the Attorney-General and Congress still have some investigating to do to see whether any persons in their vocational life made undue profits during the war. We know that certain companies make dividends on their stock of 20 to 35 per cent or upwards, and such dividends constantly raise the question of right and wrong. The following quotations from Mr. Roberts, of the National City Bank, indicate how we should feel about interdependence and ethical action:

Any system or policy that puts it in the power of a few ignorantly or wantonly to do vast injury to the community, or to subject the community to their arbitrary will, is intolerable. In the nature of things it cannot endure, and those who attempt to impose it upon others will fail and lose by so doing.

. . . . . .

If Russia fails to buy tea in China or India, our Eastern market for cottons is narrowed, the United States sells less raw cotton, and our shipping, banking, and insurance business is impaired. Illustrations could be multiplied indefinitely, showing how the trade of each country is linked up with that of the whole world.

THE HEALTH EQUIPMENT OF A MODERN FACTORY

Courtesy of B. Kuppenheimer & Co.

An interesting situation arose in Boston when a furniture store next to a well-established company painted its front, put up signs, and dressed its windows in such a way as to imitate the other company. The same forms of stationery and advertisements were used. The matter was taken to law, and the court forbade any conduct calculated to deceive the purchasing public.

Is business a game? We frequently hear it said that business is a game, and men speak of the "advertising game," the "salesmanship game," etc. It is important to remember, however, that in games there is legitimate secrecy, which is understood by all and which definite printed rules control.

The pitcher or quarterback may deceive the other side, but there is an umpire who gives his whole attention to the players to see that justice is done. In occupational life there should be no opponent in the sense there is in most games, and nobody should win at the expense of another. Business is not a game: it is rather a mutual service out of which men get their satisfactions and their living. A recent pamphlet issued by a trade school is entitled "Do you play to Win?" and one of the mottoes is "The man of action hits first and argues afterward." This is decidedly a foolish way to put it. Teamwork in games is quite different from teamwork in business, and life is built out of coöperation rather than opposition.

The significance of ethical relations in vocational life. An English manufacturer recently expressed in the House of Commons a wish that "under no circumstances should the appalling fate of being a millionaire" overtake him. He has organized a profit-sharing system in order to bring his wish to pass. This statement will illustrate the firm belief of many men who, after becoming rich, find that riches do not bring the satisfactions or pleasures which they once imagined, no matter how clearly and strongly they may have desired riches beforehand. Satisfactions and happiness come in other ways. Money has its uses, and we need a prosperity which shall give a good living to all, and a coöperative feeling that will make us think of the prosperity of all. A recent writer put it as follows:

> We need to take our boys and girls and allow them to see the grains of wheat which are placed in the ground by human labor. We need to let them see the growth of this wheat into the harvest; to help them follow it after the harvest into the channels of distribution, and from the channels of distribution into the avenues of consumption. And we need to teach them that this whole process of production, distribution, and consumption in any field is as sacred as human life itself, and whoever lays unholy hands upon it in selfish action is an enemy of mankind.—Dr. Arthur E. Holt

EXERCISES AND PROBLEMS

1. A carpenter had nailed a cloth into a window of a building under construction, for the purpose of keeping out snow and rain. Some boys went into the building and slashed the cloth with knives. Explain the thoughts in the minds of the boys and propose some plan for preventing such acts.

2. What ethical standards for high-school pupils could be drawn up? Give examples.

3. Suppose a plumber employed in the building of a house makes mistakes or neglects his work. Show the effect of this condition on the other workers.

4. Why do men and women work? If there were no more money, would everybody stop working? See whether you can explain to the class what you think the real purpose of work is.

5. During the war a few states passed laws requiring all able-bodied men to do some form of useful work. What do you think of such laws?

6. What happens if a necessary worker is required to do his work but is paid less than he needs for his living? Explain the effect on the worker and on society.

7. Suppose such a person works as hard as he can but is very inefficient. Should he be paid high wages? What cure is there for such a situation?

8. A contractor agreed to do the painting job on a new house, but in the middle of the job he told the architect and the owner that he had failed to notice in the contract that he was supposed to hang the wall paper. This would cost sixty or seventy dollars. What do you think should be done in a situation of this kind?

9. Choose an occupation and see whether it can be compared to a game. Point out the likenesses and differences.

Ethical codes in business and industry. A volume was recently printed on the ethics of professions, and it illustrates a movement which is bound to sweep into the fields of agriculture, industry, and commerce. For example, the real-estate brokers of Boston in 1921 adopted a code of ethics for real-estate transactions. It provides for such matters as renting, selling, employment, service, qualifications of brokers,

placing signs on property, compensation, listing attractions, commissions, and conciliation. The Oregon State Editorial Association adopted in 1922 a code of ethics for journalism. It contains thirty-two points on the following topics: sincerity and truth; care, competency, and thoroughness; justice, mercy, and kindliness; moderation, conservatism, and proportion; partisanship and propaganda; public service and social policies; advertising and circulation. Let us quote several of the statements. How different newspapers will be when they live up to these standards!

1. We will put accuracy above all other considerations in the written word, whether editorial, advertisement, article, or news story.

2. If new evidence forces a change of opinion, we will be as free in the acknowledgment of the new opinion as in the utterance of the old.

3. We will try so to conduct our publication, or to direct our writing, that justice, kindliness, and mercy will characterize our work.

4. We will rise above party and other partisanship in writing and publishing, supporting parties and issues only so far as we sincerely believe them to be in the public interest.

5. We repudiate the principle of "letting the buyer beware."

6. We will not make our printing-facilities available for the production of advertising which we believe to be socially harmful or fraudulent in its intent.

The Rotary Club—which, as you may know, is an international organization representing many occupations—has adopted a code of ethics, several points of which are as follows:

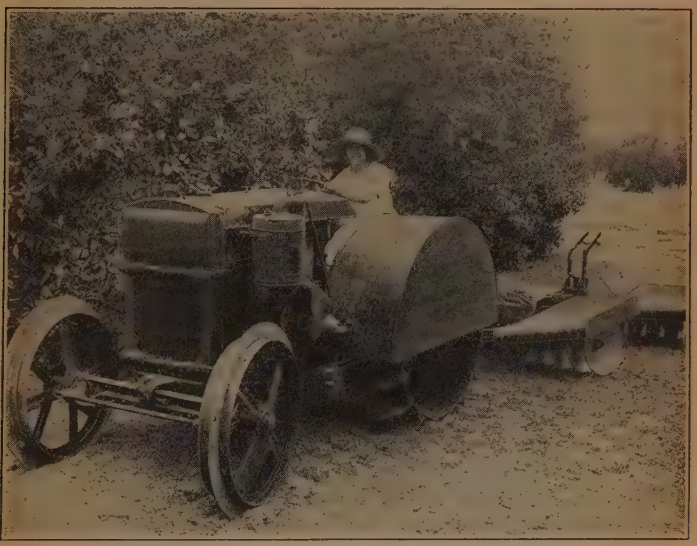
1. To consider my vocation worthy, and as affording me distinct opportunity to serve society.

2. To improve myself, increase my efficiency, and enlarge my service, and by so doing attest my faith in the fundamental principle of Rotary, that he profits most who serves best.

3. To realize that I am a business man and ambitious to succeed; but that I am first an ethical man and wish no success that is not founded on the highest justice and morality.

4. To hold that the exchange of my goods, my services, and my ideas for profit is legitimate and ethical, provided that all parties in the exchange are benefited thereby.

5. To use my best endeavors to elevate the standards of the vocation in which I am engaged, and so to conduct my affairs that others



THE DAUGHTER OF A CALIFORNIA ORANGE-GROWER DOES HER SHARE

Courtesy of *The Christian Science Monitor*

in my vocation may find it wise, profitable, and conducive to happiness to emulate my example.

6. To conduct my business in such a manner that I may give a perfect service equal to or even better than my competitor, and when in doubt to give added service beyond the strict measure of debt or obligation.

7. To consider no personal success legitimate or ethical which is secured by taking unfair advantage of certain opportunities in the social order that are absolutely denied others, nor will I take advantage of opportunities to achieve material success that others will not take because of the questionable morality involved.

8. Finally, believing in the universality of the Golden Rule, "All things whatsoever you would that men should do unto you, do ye

even so unto them," we contend that society best holds together when equal opportunity is accorded all men in the natural resources of this planet.

The advertising people have likewise adopted codes, and there have long been well-defined codes for doctors, lawyers, teachers, engineers, and many others. In some professions these codes are enforced by associations of the workers themselves.

It is clear that all forms of bad action must be ruled out of occupational life. A recent article discusses the way to sell goods to a woman who comes with her child: "A sure method of winning a mother's good will is to pay admiring attention to her child," and many suggestions tell how to discover weak points in the customer in order to sell goods to her. Some of the most widely used books on salesmanship advise such things as never to tell a woman the size of a shoe you are trying to sell her, to hurry the sale by such remarks as "Shall I send it, or will you take it with you?" and to use other forms of mental suggestion instead of relying solely on showing the goods and on above-board reasoning. In such books the different kinds of customers are described with directions for "selling the customer" in each case. When customers and salesmen are better educated, and the ideal of service is better understood, such methods cannot stand.

Ethics for every worker. There is only this to say in conclusion, that every worker has a duty to do right by all the persons with whom he comes in contact and that this is of supreme importance in developing a harmonious occupational life. You can see that if everybody should try to live by cheating, or if all should decide to live at the expense of the others, there would be no living at all for anybody. Lawbreaking by bootleggers or others is simply so much friction, so much sand in the machinery, which makes occupational life harder for everybody. When you enter occupational life, you must render service to your customers, clients, and em-

ployers, care for the safety of your fellow worker by every possible precaution, and remember that you yourself will profit by such action.

Turn now to page 2, to see our diagram. We have been discussing in this chapter relationships between columns 3 and 4 and the coöperative and ethical attitudes as they relate to vocational life. We have not been discussing the many other situations in other phases of life where men and women must be ethical and coöperative. We can see, however, that what we discuss in this book is only a small part of the problem.

EXERCISES AND PROBLEMS

1. A real-estate dealer has a place to sell for which the owner asks $3000. Another dealer has a customer who does not know the price and offers $200 more. What adjustment do you think should be made in a case of this sort in order to be fair to all four parties concerned?

2. There is a Latin phrase "Caveat emptor." Is this a good motto for business? If so, why?

3. Some salesmen "suggest" sales by saying things like "I think you like this. Shall I wrap it up for you?" Is this ethical?

4. Give instances in which newspapers have lived up to good ethical standards, as described in this chapter or in other ways.

5. Give instances in which business men have lived up to such principles as those in the Rotary Club code.

6. Prepare and give an interview on an ethical problem in occupational life.

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CHAPTER VII

HOW TO STUDY OCCUPATIONS

This interesting world. What do you think of a world with nine thousand separate and distinct kinds of jobs and four or five hundred leading occupations? In this chapter and this book we have the task of studying about this world. If you will look over the classified part of a big telephone book or the want advertisements in a big newspaper you will see the interesting and various ways in which people make their livings.

Kinds of occupations. The United States census classifies occupations under nine heads. It is possible that the 1930 census will include a tenth (namely, homemaking), or take a census of the homemakers under one of the other heads. For some queer reason women in the home, no matter how hard they work, are not classed as having a "gainful employment."

We shall discuss each of the United States census classifications briefly here.

1. *Agriculture, forestry, and animal husbandry.* This section contains such important workers as the farmers of all kinds, the forester, poultry-raiser, florist, and fisherman. You can see how large a group it includes and the variety of workers. We have listed below, in a comprehensive table, the percentage of all workers engaged in the various occupations. It must be remembered, however, that the census in 1920 was taken in January instead of April (as formerly), and therefore fewer persons were listed as agricultural workers. No doubt the use of machinery on the farms had an influence in bringing down the percentage. The farmer's wife is a very important worker. Perhaps she should not be classified as an agricultural worker, though she often helps; but her efficient work under hard conditions contributes to the success of American farms.

2. *Extraction of minerals.* This includes the worker in extracting the common metals, as well as the oil-well operator, the quarryman, and the stonecutter. Naturally enough these workers are outside our cities, and many of our immigrants do the work. The extractors of metals are so important a group that our manufacturers could not do their work without them.

3. *Mechanical and manufacturing industries.* This group includes the workers in what are ordinarily called trades: the carpenter, baker, steamfitter, clothing worker, dressmaker, plumber, plasterer, automobile worker, watchmaker, printer, molder, etc. As you see by the figures, it is a tremendous group and is growing very fast in the United States. If the present developments continue perhaps we shall have to depend on the other nations more and more for our food, and even, in some cases, for the raw materials. We shall then give ourselves over chiefly to manufacture and commerce. Would this be a wise thing to do? What effects would it have on us?

CLEANING BRICKS

Inventions make rough work interesting

4. *Transportation.* The transportation group of workers is a peculiar one in that approximately half of the workers—as, for example, the locomotive engineer, fireman, brakeman, motorman, switchman, truck-driver, aviator, sailor, boatman, garage-keeper, etc.—are workers very much like those in manufacturing and mechanical industries. They operate machines or use tools, and might be classed in group 3. Another large group of workers—as, for example, the conductor, express messenger, freight agent, baggageman, mail-carrier,

and ticket agent—contains workers who are like those in commerce, and might, therefore, be included in group 5.

5. *Trade.* This name, "trade," is related to *trading* (that is, buying and selling) and not to what we ordinarily mean by trades. The word has a double meaning, you see, and group 5 might better be called "commercial occupations." Here we have the advertiser, banker, salesman, retail dealer, insurance agent, newsboy, proprietor, and window-dresser. It is a field of occupations largely indoors and contains what are sometimes called the "clean-collar jobs." It is concerned with the exchange of goods which others have produced, and thus acts as a link to connect the agricultural and mechanical workers with the consumers.

6. *Public service.* Public service includes those workers, not otherwise classified, who serve in the various forms of government—local, state, or Federal. Thus, the constable, sheriff, policeman, life-saver, lighthouse keeper, postman, and soldier are in this group. Carpenters, stenographers, and others who work for the government are not classed under "public service" but in their usual classifications instead.

7. *Professional service.* It is supposed that a profession is an occupation which has a long-continued and rather definite preparation, represented usually by college and technical education, and has developed a standard of good conduct, basing its work on the service idea rather than on money. This group includes the actor, artist, author, editor, lawyer, architect, musician, nurse, physician, secretary, and teacher.

8. *Domestic and personal service.* These workers are represented by the barber, bootblack, cook, hotel-keeper, janitor, launderer, waiter, and servant. Since the census records include only "gainful employments," homemakers in their own homes are not included in this division. See number 10, below.

9. *Clerical occupations.* This group includes the bookkeeper, cashier, office boy, shipping clerk, and stenographer. It is closely related to trade, or the commercial occupations, in group 5, but is different in that these workers in group 9 are engaged in the clerical machinery of commerce rather than in actual trading, or commercial, operations themselves.

10. *Homemaking.* This group contains approximately 21,000,000 workers, but is not yet recognized as a census group. It is possible that it should be included under group 8, though it is important enough to warrant a separate classification.

Other classifications. All the occupations of vocational life are sometimes reduced to three groups: industrial, commercial, and professional. The industrial group would include groups 1 to 3, part of 4, 8, and 10, in the census classification described above, because these workers are concerned chiefly with handwork or similar operations. The commercial group would include 5, 9, and part of 4. The professional group would include a good many members from group 6, as well as all of group 7. Sometimes four groups are used: agricultural, mechanical, commercial, and professional.

There are many peculiarities in occupations, as, for example, that of the office girl who runs an addressograph—practically a factory worker. The dentist is classified rightly as professional, but obviously he uses many operations of the mechanic.

Census figures. The table on page 92 is a comprehensive summary of the census figures.

EXERCISES AND PROBLEMS

1. In what way do the tasks of the farmer and the miner resemble each other?

2. Besides the change of date for taking the census, do you think that the use of tractors and other farm machinery has had any influence on the decrease of agricultural workers?

3. Would it be a good thing for our country to become a manufacturing nation with fewer and fewer agricultural workers?

4. Write down the name of one well-known person in each of the nine groups of occupations. Bring the list to class and see whether it is correct. Write the list in your notebook.

5. Make a list of the different workers who built the schoolhouse and help to keep it going. Label each occupation with the census classification.

6. Study the table of occupations and see how many interesting things you can find out about it. Tell some of these in class.

7. In view of changes from 1910 to 1920, and probabilities for the future, what changes do you think the 1930 figures will show?

Occupations of Persons Ten Years of Age and Over

General Division of Occupations	1920		1910	
	Number	Per cent	Number	Per cent
Both Sexes	41,614,248	100.0	38,167,336	100.0
1. Agriculture, forestry, and animal husbandry	10,953,158	26.3	12,659,082	33.2
2. Extraction of minerals	1,090,223	2.6	965,169	2.5
3. Manufacturing and mechanical industries	12,818,524	30.8	10,628,731	27.8
4. Transportation	3,063,582	7.4	2,637,420	6.9
5. Trade	4,242,979	10.2	3,614,670	9.5
6. Public service (not elsewhere classified)	770,460	1.9	459,291	1.2
7. Professional service	2,143,889	5.2	1,693,361	4.4
8. Domestic and personal service	3,404,892	8.2	3,772,559	9.9
9. Clerical occupations	3,126,541	7.5	1,737,053	4.6
Men	33,064,737	100.0	30,091,564	100.0
1. Agriculture, forestry, and animal husbandry	9,869,030	29.8	10,851,581	36.1
2. Extraction of minerals	1,087,359	3.3	964,075	3.2
3. Manufacturing and mechanical industries	10,888,183	32.9	8,808,161	29.3
4. Transportation	2,850,528	8.6	2,530,795	8.4
5. Trade	3,575,187	10.8	3,146,582	10.5
6. Public service (not elsewhere classified)	748,666	2.3	445,733	1.5
7. Professional service	1,127,391	3.4	959,470	3.2
8. Domestic and personal service	1,217,968	3.7	1,241,338	4.1
9. Clerical occupations	1,700,425	5.1	1,143,829	3.8
Women	8,549,511	100.0	8,075,772	100.0
1. Agriculture, forestry, and animal husbandry	1,084,128	12.7	1,807,501	22.4
2. Extraction of minerals	2,864	0.0	1,094	0.0
3. Manufacturing and mechanical industries	1,930,341	22.6	1,820,570	22.5
4. Transportation	213,054	2.5	106,625	1.3
5. Trade	667,792	7.8	468,088	5.8
6. Public service (not elsewhere classified)	21,794	0.3	13,558	0.2
7. Professional service	1,016,498	11.9	733,891	9.1
8. Domestic and personal service	2,186,924	25.6	2,531,221	31.3
9. Clerical occupations	1,426,116	16.7	593,224	7.3

Some interesting differences. Both men and women are in almost all the occupations. For example, in the 1920 census, women workers are classified as follows: 5068 gardeners, 379 fishermen, 279 lumbermen, 171 carpenters, 4 blacksmiths, 7 brick- and stone-masons, 3 plumbers, 6 plasterers, 10 tinsmiths, 89 glass-blowers, 103 painters, 408 paperhangers, 8 aviators, 253 conductors, 20 motormen, 949 chauffeurs, 32 sailors, 236 policemen, 21 lighthouse keepers, 13,378 accountants, 99 iron-mine operatives, 279 porters, 14,134 hotel-keepers, 759 "bellboys," and 7337 elevator girls. At the same time, as is well known, men have for the past twenty or thirty years persistently taken over women's work, so that clothes are made, food is prepared, and laundry work is done by men workers. The following figures are interesting as showing the number of men in certain callings: 398,475 cooks, 5464 trained nurses, 11 "nurse maids," 250 "chambermaids," 103,997 launderers, 97,839 servants, 112,064 waiters, and 50,410 stenographers and typists.

Although women are doing a great deal of heavy work, heavy lifting and moving of goods is, on the whole, done by men. In Soviet Russia women work with men at laying rails, and in Europe generally farm work and construction work are done by both. In 1910 we saw a woman pushing a wheelbarrow full of bricks up a plank, in the construction of a new building in Vienna, and this is no uncommon sight through continental Europe. It is interesting to know that there is very rarely such a thing as a "light outdoor occupation," though many persons in failing health have been advised to take up such a calling. If one has charge of bees or chickens, he may need to lift hives, sacks of grain, or other heavy objects, and the same is true of practically all outdoor vocations. Some companies using both men and women say that the only objection against paying women the same wages is that when there is a big job of lifting or moving, the women have to stand aside and men have to be brought in to help. Many conveyors and other devices are now being installed in

factories, however, and frequently men and women can work side by side and the woman produce fully as much as the man.

Dean Schneider, of the University of Cincinnati, classifies all work as "enervating" or "energizing." His statement is that the factory worker who feeds a machine all day long, or does just one process, or helps to assemble a number of parts into an engine or automobile, is working at an enervating task; that is, a task which takes energy out of him and makes him dull, heavy, and discontented. The carpenter and locomotive engineer on the other hand have energizing jobs; that is, tasks wherein they can easily put energy and joy. Probably the truth lies between these extremes. Many tasks have both qualities. Though teaching is an extremely interesting job, you know of teachers who have five or six big classes a day and feel some enervating influence from their work. It is going to be possible, many men think, to make all work energizing,—at least to bring in some outside interests to satisfy the workers.

Another interesting classification of occupations is into productive and distributive tasks. In reality, all good, worthy, and necessary occupations should be called productive, but it is true that some are directly productive and others only indirectly. If the farmer plants some corn, it is quite clear that the farmer himself does not make the corn grow. Yet we call him and the factory worker producers. The commercial worker, however, is not concerned with changing the form of the goods, but only the place and convenience. He is, therefore, a distributor, and thus indirectly productive. Professional workers too are indirectly productive. The teacher, for example, helps in the growth of intelligence, and this, in turn, may lead to production on the part of the pupils.

Different kinds of work are also sometimes classified as clean or dirty, respectable or degrading. The ancient Greeks used to think of all handwork as degrading, and until a hundred years ago trade and commerce were looked down upon. But we are coming to see now that any worker who serves well should be respected and given whatever honor is due him. "Clean" and "dirty" are not good descriptions of work and make no real difference. Some occupations are classified as ethical or religious, and there are books written on the religious occupations. Perhaps all worthy occupations, if carried on unselfishly, ought to be called religious, though it is true that the minister, priest, and others are more directly concerned with religious matters.

Are there unsocial occupations? Some persons think of certain occupations as against the best interests of society, and the government has prohibited certain ways of earning a living. Fifty years ago it was not uncommon for people to sell lottery tickets, but now this method of earning a living

HERE NEGRO BOYS ARE TRAINED IN COOKING AND BECOME ASSISTANTS ON DINING-CARS

Courtesy of the Santa Fe Avenue School, Los Angeles

is outlawed. Bootlegging has always been outlawed, and the saloon-keeper is out of a job and now is engaged in lawful occupations. Many people who are against such habits as smoking, dancing, card-playing, theatergoing, etc. consider the work of all engaged in these callings as unsocial and hope for the day when some of them will be restricted or prohibited. Again, there are many occupations connected with extravagance, and these are often called unsocial. A fifty-dollar bathing suit was recently advertised. Expensive forms of recreation and unnecessary show are sometimes paraded in the papers and indicate kinds of occupations which, to say the least, do not contribute to people's happiness or welfare.

Intelligence standards for occupations. During the war a great number of men were given the psychological tests, and records were taken to show their occupations. As a result a classification was made listing the various occupations on the basis of their average scores, with the common laborer at the bottom and the engineer at the top. These records were taken in a great hurry and probably are not very accurate. Nevertheless, they do indicate that people with the brightest minds go into the professions, that the next group, averaging a little lower, enters commerce, that those not so bright or well-educated enter the skilled trades, following which is the semiskilled group, and finally the unskilled laborer. There is an enormous amount of overlapping, so that there are some barbers with intelligence scores superior to those of the average bookkeeper, and many architects who score lower than the average of the unskilled. An interesting classification of various grades of skill in machine work from low to very high was published in *Management Engineering*, September, 1921, by Edward Petersen. The grades are as follows, beginning with the simpler kind of work:

Grades of Skill

1. Work requiring no exercise of mind: sweepers, wheelers.
2. Work requiring small amount of thought: truckers placing material at particular points, grinders, machinists' helpers, oilers, cotton-waste-machine tenders.
3. Work requiring some thought and care, and instruction: operators on simple turret lathes on quantity production, operators on simple drill presses, chippers, cotton-duck weavers, wick-weavers, rope-machine tenders, sand-blasters.
4. Work requiring a careful man, some mental concentration: simple drill press on T-lathe work requiring special care, simple work in small quantities, milling-machine hands, galvanizers, loom-fixers.
5. Great care, occasional mental concentration, close application, long experience or dependability: floor-molders, tool-repair men, tool-room men, spinners and carders, machine-fixers, testers and assemblers.

6. Work requiring mental concentration, close application, and long study and experience: toolmakers and high-skilled machinists, patternmakers, cabinetmakers, electricians (first grade), high-grade molders.

EXERCISES AND PROBLEMS

1. Do you think that any occupations should be prohibited? Give reasons.

2. Which occupations should be prohibited to uneducated persons? Give your reasons.

3. List five necessary occupations that people do not always respect. Tell why these occupations are important.

4. List five occupations in which the work is dirty or unpleasant. Tell about some advantages they have. Tell how we may learn to think differently about such occupations.

5. Make a list of five occupations which may be called energizing. What makes them interesting?

6. In the list of grades of skill above, do you agree with the author in stating that sweepers and wheelers require "no exercise of mind"? What would be a more exact statement of the facts?

7. Look over this book and see whether it resembles a geography in any way. Can you imagine these different chapters—agriculture, commerce, transportation, and so forth—to be like separate continents and to be studied just as the continents are in geography? Can the separate occupations be compared to states or cities in each continent? If this comparison is a good one, show why we need to study occupations even if we are going to settle down to just one place in the occupational world.

8. A man recently said that the roads or lines of travel between different occupations were just as important to study as the occupations themselves. Do you think this statement was justified? If so, why?

9. In the next twenty years which will change more, the geography of the United States or the occupations of the United States? Show how even if memorizing facts might be good for geography, it will not work for occupations.

10. Stage an interview with a fellow student who plays the part of wanting to know about the benefit to society of several occupations he is considering.

What we need to know about occupations. In studying an occupation it is necessary to take into account all sorts of questions. We have listed these under eight topics in Chapter II, page 17. It is necessary to develop a standard of judgment which you can apply to all occupations, and for this purpose we give you here a check list, or question list, which will enable you to study any occupation in which you are interested. This list develops subtopics under each of the eight points, together with certain topics for general consideration and references for reading. These references you can obtain from the best comprehensive bibliography of occupations, Frederick J. Allen's "A Guide to the Study of Occupations," published by the Harvard University Press. We have listed many such references at the ends of the various chapters, and although our treatment of occupations does not always follow this particular outline, the plan itself is comprehensive enough for a thorough study.

A Check List for Occupational Study

I. Importance:
   1. Is this occupation really necessary?
   2. Could society do without the service of this worker?
   3. What would happen if the workers should stop?
   4. Is the product a necessity or a luxury?
   5. Is it necessary always, or only at one particular time of the year?

II. Work done:
   1. What different kinds of work are done by various people in the occupation?
   2. Make a list of the different things a given worker does.
   3. Outline his day's work.

III. Advantages:
   1. Service to humanity.
   2. Chance to learn.
   3. Ease of entrance.
   4. Demand for workers.
   5. Steady work.
   6. Growing importance.
   7. Interesting work.
   8. Promotions.
   9. Friends and associates.
   10. Hours.
   11. Vacations.
   12. Good living.
   13. Healthful work.
   14. Moral and ethical aspects.
   15. "Energizing" work.
   16. Other points.
   17. Ways to reach higher occupations.

IV. Disadvantages and problems:
(Use the same list as under III. See whether any of the questions apply.)

V. Preparation:
1. Does the worker use eighth-grade arithmetic, drawing, or English?
2. Does the worker use geography or science?
3. How much education is a minimum requirement?
4. What studies are most useful: English literature, oral English, composition, algebra, geometry, mechanical drawing, free-hand drawing, physics, chemistry, biology, physical education, history, civics, music, or other studies?
5. Is a college education good preparation in helping the worker to be more useful?
6. Are there vocational courses to teach this occupation? Tell about them: admission requirements, length of course, cost, how conducted, advantages.
7. Are there any opportunities for part-time work and school, or for an apprenticeship plan? In the occupation is there advanced training to prepare a person for promotion to higher positions?
8. What preliminary experiences would help one to prepare? What Saturday or vacation opportunities are there?
9. Must the worker serve a preliminary or apprenticeship period? If so, how, when, where?
10. What "stepping-stones" are there to successful service in the occupation?

VI. Other requirements:
1. Ability to get along with people.
2. Ability to follow directions.
3. Ability to lead other people.
4. Ability to use good English.
5. Cheerfulness.
6. Common sense; good judgment.
7. Courtesy.
8. Ideals of honesty.
9. Responsibility; trustworthiness.
10. Ideals of service and usefulness.
11. Initiative; resourcefulness.
12. Mechanical skill.
13. Orderliness; system; neatness.
14. Promptness; punctuality.
15. Perseverance; industry.
16. Physical strength, health and vigor.

VII. Income:
1. Can you estimate the yearly income under usual conditions of work? What are the wages per week, or month, or hour?
2. Can you arrange the different positions in the occupation in the order of their income to the worker?
3. What can you say about the pay at the beginning, and the increases as one obtains further experience?
4. What is the method of pay?
5. Does the worker receive enough pay to maintain an American standard of living?

VIII. Effect on the worker:
  1. Social:
    a. Is he recognized as a useful member of society and given a proper place in society?
    b. Does his work help to make him more tactful and socially agreeable?
  2. Civic: Does the work help to make him a better citizen?
  3. Physical: Does the work have a good effect on his health?
  4. Does the calling allow him to have a good home life?
  5. Recreational:
    a. Does the work give him time for proper recreation, and does it encourage helpful forms of recreation?
    b. Are there rest or recreational periods during the work hours?
  6. Mental life: Does the work stimulate the thinking of the worker?
  7. Moral life:
    a. Does the work help him to become a better person?
    b. Are the influences in the place of work wholesome?

IX. General considerations:
  1. History, development, and future of the occupation.
  2. Relation to other occupations.
  3. Comparisons with other occupations.
  4. From what occupation may one enter this calling?
  5. Does the occupation lead to a better vocation?
  6. Instances of successful service in this occupation.
  7. Are the workers organized into unions or other associations?
  8. What laws influence or control the work or workers?

X. Brief list of references for reading.

Job specifications. Under our topic number II above—the work done, or the tasks actually accomplished by the worker—employment managers or personnel directors have worked out exact and detailed descriptions of the various jobs. These are obtained by experts, who watch the workers carefully, sometimes taking motion pictures of their operations, and then write out in detail the things the workers do, and sometimes also the specifications required for hiring such a person. We reprint here a specimen of job specifications. If you are considering an occupation or a job, can you describe it in exact terms like these?

Job No.: 3–1. Grade: B. Occupation: gummed-label cutters. Time required to learn job: three months. Previous training or

experience: table work in department. Starting wage: ——. Next advance: modified task and bonus. Wage limit: ——. Age: 17–22. Height: 5 feet 3 inches. Weight: 120. Posture: standing. Motion: quick. Hands: strong. Eyesight: accurate. Schooling desired: grammar. Overtime: none. Lay-offs: perhaps two weeks a year.

Duties of job: A block is furnished and adjusted to the proper height for the individual girl. On these are laid sheets of gummed paper, plain or printed, in numbers 25 or 40, or some convenient unit for counting 1000. They are fastened to the block.

Hollow dies with handles are provided for each size and shape of label. The die is placed on the paper and struck with a rawhide mallet, which cuts through to the block. The labels are counted by the number of cuts made, and boxed according to the order.

Method of pay: Task and bonus, with a quality and attendance bonus.

The job requires that a person stand all day, and a girl to be content must not have broken arches, rheumatism, or a weak back. A girl at least 5 feet 3 inches works with least fatigue; if much taller, stooping over the block brings on needless fatigue, and she becomes discontented. On the other hand, if she were shorter she would have to hold her hands in an unnatural position, which is tiresome.

She must also know enough arithmetic to remember that when cutting a thousand labels in "lifts" of 34 she would get 102 labels every time three cuts were made, which would be the amount required to fill a box.

Owning one's own business. Being one's own employer is a great satisfaction to some people, and they would rather do it at a loss than work for somebody else. Others are perfectly content to be workers in the ranks and avoid all the worries of bookkeeping and other financial matters. There are many people who like to use their minds on matters outside their work, and who therefore for vocational purposes prefer routine tasks which do not tax their minds. Certainly our diagram in Chapter I indicates many life activities worth the best of our energy. Nevertheless business must be run by somebody, and very often people of superior ability can perform a greater service in running an enterprise of their own than by working as employees.

McKinley Junior High School Library

It is important to remember, however, that owning your own business requires a special education, training, or experience in business affairs, in addition to other occupations with which the business may be concerned. There are many young auto mechanics or machinists who gain a great deal of skill and then think that it will be a simple matter to set up in business for themselves. They may be very skillful in finding trouble in an automobile and in making the necessary repairs, but they may know nothing of cost accounting, perhaps little about salesmanship or advertising, and therefore may make a failure of their venture. It is better to wait until one has made a careful study of such topics as marketing and other business affairs before undertaking such a business.

A group of boys made some very interesting investigations of the retail stores and shops in the various suburbs of the city of Boston. You know how these little stores cluster about certain neighborhoods or places where important streets cross. The investigation took the form first of listing the kinds of business and then of asking questions relative to the following topics:

Questions for the Study of a Store

1. Advantages as compared with other lines of merchandise.
2. Reasons for choosing this particular locality.
3. Amount of capital needed to start.
4. Volume of business and profits.
5. Value of stock, and annual turnover.
6. Study or experience necessary.
7. Qualities of character needed for success.
8. Value of business as a public service.

You can see from some of these questions that the boys had an interesting experience in their investigations. Many good answers were given on topics 2, 6, and 7, but in many cases answers were refused on 3, 4, and 5. This secrecy is important to know about, as showing how difficult it is to find out the facts before you go into business for yourself.

A most interesting comparison can be obtained from census figures which we give roughly in the following comparisons. In agriculture there are about as many farmers who own or manage their own farms as there are farm laborers who work for wages. This would indicate that one out of two persons is probably owner of his farm, and would seem to show that in agriculture you would have one chance out of two of becoming your own boss. In the commercial occupations, particularly in the retail stores, there are about twice as many wageworkers as owners, and this would indicate that your chances in commerce of becoming a proprietor are one out of three. These figures may surprise you, when you think of the big stores, but you must remember also how even in cities like New York there are miles and miles of little shops each run by one or two persons. In industry, however, the figures are quite different. There are about thirty or more wageworkers to every proprietor, showing that the average size of factory or shop is smaller than perhaps you imagined, yet not nearly so small as is the average store. In the mechanical trades, therefore, your chances to become a proprietor are something like one out of thirty.

In professional life there are very interesting differences. Most doctors and dentists and many lawyers are managers of their own business,—if their work can be called a business. On the other hand, great numbers of engineers are employed on salaries by industrial and other corporations, and not many of them are proprietors for themselves. Very few teachers are owners, most of them, of course, being employed by cities or states, and a much smaller number by private schools and colleges. Probably no clergymen whatever own their own establishments, but all are employed by churches. So we might describe the condition of affairs of the actor, artist, author, editor, architect, musician, nurse, and the rest, some of all these running their own affairs and others working for salaries or wages. We have no way of telling what the exact figures are.

EXERCISES AND PROBLEMS

1. Prepare a brief statement on any occupation, following the eight topics on page 17.

2. Explain the difference between an occupation and a job. Use a dictionary.

3. Prepare a job analysis of a simple task, such as pumping up an automobile tire, washing windows, or hoeing weeds.

4. Choose a place where there is a small group of stores or shops. Make a list classifying these places, as grocery stores, tailor shops, etc. Perhaps several of you can examine different localities and put the results together. Find out how many of each kind there are.

5. Choose an owner of a small store and ask him the questions on page 102.

6. The class may choose an occupation which you all know about, and study it according to the big outline labeled "A Check List for Occupational Study." Each student may take one topic. It will take nine or ten to give the whole story; and if each person prepares his part, the characteristics of the occupations can be described in class, each person reciting in turn.

7. Interview an owner and ask him about the problem of starting a business for oneself as compared with working for others.

8. Describe some of the professional people in your neighborhood who are on salary and some who are independent workers.

9. Prepare and give a conversation with a student on a question of obtaining information on occupations.

10. Stage an interview with a person who wants to leave your employ and start a business, factory, or farm of his own.

How to use Part II of this book. We are by no means giving you facts to remember, but rather points to think about. Part II of this book can but start you on your way to consideration of some interesting points, and therefore you ought to question everything you read. Use the book critically and as a mere textbook, not as an encyclopedia or compendium which is supposed to teach you everything. We have given references where you may find further information, and the exercises are designed to stimulate your thinking and suggest investigations of your own.

How to supplement the book. Besides the use of this book and references, you ought to get well acquainted with the vocational books in the library. Suppose you are looking up architecture: it is important to tell the librarian whether you want a book to help you consider architecture as your possible calling, or whether you want a book showing what one should do to prepare for that profession. You may want to compare architecture with law, but if you do not tell the librarian, she may give you a book describing the architecture of ancient Greece, and this will not help you solve your problem. Law books or medical books will give you no such information as you need for the purpose of understanding occupations from the outside.

Magazines and newspapers are useful if you are critical and do not believe all you read. The fashion nowadays is to exaggerate and to play up certain points with a little more spotlight on them than is justified by the facts. Thus, an advertisement or an article will tell of marvelous success through a certain method, whereas it is quite unlikely that one out of a thousand could get the same success by the same method. Occasionally you can glean a great deal of interesting and valuable information. A recent newspaper clipping states, for example, that the labor unions in certain cities are building houses for homemakers. This is an exceedingly interesting fact for workers, architects, managers, bankers, contractors, and the rest to know about, particularly if it should develop widely.

You may have a school counselor, or adviser of students, who can undoubtedly help you with the references or direct you to other help. Young Men's Christian Associations and Young Women's Christian Associations are in many cases developing vocational guidance, either through the "Find Yourself Idea" or some other method of vocational counseling and placement. Sometimes they maintain employment bureaus for securing positions. The Young Men's Hebrew Association in many cities maintains a Big-Brother Club

for the guidance of young boys entering upon work. There are some churches and Sunday schools, and many fraternities and clubs which help in the guidance of their members. In many cities Girl Scout and Boy Scout organizations offer vocational guidance. Settlements and boys' and girls' clubs frequently give advice.

In many cities there are Departments of Vocational Guidance connected with the schools, in which counselors advise with young people. Then there are certain national organizations which help in this problem. The Bureau of Vocational Guidance, Graduate School of Education, Harvard University, can sometimes assist with difficult problems which local agents may not know about, and the Bureau of Vocational Information of New York City is equipped to deal with the vocational problems of college women.

Get acquainted with work and workers. You always have the opportunity to observe the groceryman when he serves you, the ticket-seller, conductor, teacher, doctor, and many others. Do they seem to like their work? Are they interested in giving service? Or do they talk about money, wages, and getting ahead all the time? Are they willing to talk about their work? And, above all, do they try to explain to you something about their operations, or have they an air of secrecy? The rattle of the steam riveter, the hoisting of iron beams, the laying of bricks, and other such operations are fascinating, but for your purposes you should pay more attention to the workers than to the process. It is not especially important that you should know just what happens to the metal and the frame in the welding process, but it is important that you should think of yourself in the place of the worker and see what you can gain from that bit of imagination. Talk with the workers when possible, and at home and at school talk and write about your experiences. In college it is sometimes considered the fashion to ignore the occupational world and live in a land of dreams, which consists largely of social affairs and athletics with a few studies

mixed in. People who ignore the workaday world often have rude awakenings when later they are faced with actual vocational situations. It is better to consider the vocational probabilities ahead of you.

The probability for you is that you will go into an occupation in which you will earn your living by work with your hands. You are very likely, for a large share of your life at least, to be an employee, though you may later own a business of your own. It is likely that you will be one of the skilled or semiskilled workers of the world most of your working-life, though there are good chances for you to be promoted to a directive position if you will qualify yourself. There is a slight chance, if you are an average person, and a good chance if you are especially good in your studies, to become a professional worker. These are the chances for a high-school boy.

If you are a high-school girl, you are likely to have several years of occupational experience before you take charge of a home. The chances are about equal that you will secure some kind of position in an office or store or that you will do work in some kind of factory. The chances are that you will have a position without executive responsibility and perhaps under the direction of supervisors. There is some possibility that you will go into such a profession as nursing or teaching, or any of the other professions. After spending from one to ten years in such work, in commerce, industry, or professions, there is about a four-out-of-five likelihood that you will take charge of a home and begin the occupation of homemaker. After a longer or shorter period, there is some chance that you may again enter into occupational life, probably in some such occupation as you had before, though possibly on a slightly higher level.

These facts indicate that, whether boy or girl, you should keep in touch with the work of the world and not hold yourself superior to or remain ignorant of its important and interesting characteristics.

Do not judge by your town. One of the most important mistakes people make is to judge occupational life by what they see close about them. One special advantage of this book is that it will widen your horizon, no matter how narrow this may be. An investigator some years ago studied the life histories of 22,000 thirteen-year-old boys in seventy-eight American cities. He found that about half of the boys then lived in different towns from those of their birth. No doubt in the next thirteen years of those boys' lives their moving about was likely to be even greater. It is foolish, therefore, for a farmer boy to think only of the farm or a city boy to think only of the city. There are many city boys who will succeed, with proper guidance, in agriculture, and some country boys who ought to take up occupations like those of the town or city.

There are some city occupations in the country, and truck gardens and other agricultural enterprises are carried on near towns. We have estimated that even in the intensively rural sections, such as the dairy country of Vermont, only three fourths of the workers are actually engaged in agriculture itself. At least one quarter of them carry on other occupations, being engaged in storekeeping, road work, and building and as doctors, lawyers, preachers, teachers, postmasters, stage-drivers, etc.

Moreover, we have studied so-called "one industry" towns, —particularly the shoe centers and textile centers of New England,—and find that certainly not more than two thirds of the population are actually at work in the mills or factories. This means that there is one worker in the various other occupations to every two in the basic industry, and indicates that there are openings for boys and girls in such cities in all the various common callings. In the city of New Bedford, Massachusetts, an interesting thing happens. Ninety or ninety-five per cent of the boys and girls who go to work before the age of sixteen go into the textile mills, but later a large number of them drift out into other occupations.

While you ought to know best those vocations closest to you, select a number from each of the census classifications, and thus become cosmopolitan in your interests and knowledge. Study changes in occupations. New needs arise, new demands are made, and inventions come to change the face of the occupational world. The writers of this book can remember the time when automobiles were considered an impossibility, and one of them remembers when a group of mechanics decided unanimously that the pneumatic tire was impractical and bound to fail. Think of the difference these two inventions have made, including the necessity for a reclassification of occupations. Aviation and radio are just beginning. Marvelous inventions are ahead in electricity, tide control, chemistry, fuels, aviation, construction, heating, ventilating, lighting, business organization, coöperative distribution, and hundreds of other fields. This book will have to be studied in the light of future science and invention. You will never finish the task of studying occupations. Vocational life is not all there is of life, but it is the part which represents so much of our effort that we shall always be very much concerned with it. Hence the need for studying the occupations of the future as well as those of the present and past.

EXERCISES AND PROBLEMS

1. Bring to class two books on an occupation, one of them discussing the characteristics of the occupation and the other giving the directions required for the actual work. Read to the class the prefaces and tables of contents and explain the difference between the two books.

2. Investigate the opportunities for securing information about occupations. Report to the class what can be done in libraries or other places.

3. When you go to and from school, what workers do you see? Make a list and bring it to class.

4. When you go to a grocery store, what workers do you meet? What other workers supply them with goods?

5. Interview a union worker. Ask him about his problems. Without using his name report something of his statements, being careful not to say more than he would like to have told.

6. Interview an employer. Ask him about his difficulties and report to class, using the same caution as in Exercise 5.

7. Interview a woman in charge of a home who has also another occupation. Find out how she makes her adjustments between the two kinds of work, and report the result to class.

8. Can you think of probable inventions that may change occupational conditions? Explain some of these and discuss probable results.

9. Stage an interview to ask about an occupation.

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For further references see the list at the back of the book.

CHAPTER VIII

DISCOVERING YOUR INTERESTS AND ABILITIES

Using occupational knowledge. Our last chapter dealt with the use of occupational information. This is an important means of helping you to discover your interests and abilities. If you will watch workers at their work, talk with them, read about occupations, study the different kinds, and contrast one occupation with another, you can imagine yourself as carrying on the work of the different occupations and thus discover which interest you, perhaps gaining some hints on the question of your abilities.

Using school studies. In Chapter III we have described the school studies and their relation to the world of occupations. It is important that each of these studies should at least be touched upon in your education, and that you should get a broad knowledge of the study as a basis for deciding whether or not you wish to go further. Thus, a course in general science ought to inform you as to the occupations that use science, and awaken your interest in biology, physics, and chemistry. Does your study of science make you interested in electricity or mechanics or chemicals? Again, it is important that you should see something of the simpler processes in algebra and geometry, so that you can test your ability in the mathematical sciences and your interest in the related occupations.

Another important consideration is to have some experience with those studies which are consecutive in their development; that is, studies in which tomorrow's lesson depends upon doing well the lesson of today. This is not true of English or history, as you have no doubt found out when you have been absent from school a day or two. It is possible to

carry on your new lesson even if you missed some of the intervening subject matter. In geometry, Latin, or physics, however, it is impossible to do today's lesson without yesterday's; and this fact gives you a kind of discipline which the other studies cannot very well furnish.

The studies of the school should help you not only to discover yourself but also to try yourself out by means of interesting school tasks. If you can sit and translate Latin or French for two hours at a time, it is quite clear that you may be able to take up proofreading, stenography, or some other such occupation which requires similar ability. If you are content to sit all the afternoon and draw, it is quite possible that this may indicate an aptitude for full-time occupations which are similar,—such, for instance, as the work of the illustrator, artist, draftsman, or architect. Are you able, for instance, to take satisfaction in your composition work? If you can write compositions and enjoy the work, and if you are fond of revising and expanding them, this is an important consideration for your vocational future, since this ability is used in so many occupations. You should constantly try to discover what it is you like about the school studies, and the reasons for your liking. Sometimes you may like a study because of the friendliness of the teacher, or because of some fortunate situation such as having good friends in the classroom or being praised by the teacher. Clearly these are not legitimate reasons for liking a study. A better way to proceed is to discover whether you like the study for its own sake—for what it means to you in the satisfactions it gives you—and whether you would like full-time work of a similar nature.

Vocational tryouts. A great many schools, both junior high schools and high schools, are offering a definite opportunity to experiment in a number of interesting exercises which resemble very directly the work of the world. For example, a recently issued course entitled "An Introduction to Business Procedure" gives the students in turn a number of tasks in each of the following activities: telephone prac-

tices, telegraph practices, express service, post-office facilities, railroad clerical work, banking practice and facilities, insurance operations, merchandising practices, commercial agencies, and how to use business reference books. In connection with the first one, telephone practices, an explanation is given of how the telephone works, followed by instruction

A PRINTING "TRYOUT"

Courtesy of the East Side Continuation School, New York City

and practice in using the telephone,—placing a local call, answering a call, using a coin box, the use of a telephone in a public station, long-distance calls, the handling of telegrams by telephone, notification of trouble,—the handling of telephone bills, and a number of other exercises.

The state of Michigan has issued an outline course in home mechanics which includes elementary exercises in twenty-one subjects, including the use of construction material, sharpening tools, soldering, glazing, painting, locksmithing, simple plumbing, household electricity, furnaces, and refrigerators. Another such course lists furniture repair, soldering, wiring,

repairing of faucets, repairing of chicken coops, fence-building, glazing, adjusting windows and doors, and putting wire on a screen door or window. In a Pittsburgh school simple exercises in six trades may be obtained in one room, and in the following year successive tryouts are given in separate rooms. A photograph of this shop is given below.

A "GENERAL SHOP," WITH TRIALS IN SIX TRADES
Courtesy of the Latimer Junior High School, Pittsburgh

Similar tryout work is sometimes arranged for girls, particularly in occupations having to do with homemaking. If you have such an opportunity, either in school life or in connection with club work, be sure to take advantage of it. The main thing for the high-school age is a broad course of study, so that you may touch upon each of the common subjects in your quest for discovering your interests and abilities.

Using student activities. Student activities are surprisingly like the world of work. Thus, the carrying on of a student lunch room or bookstore, the managing of athletic contests, selling tickets, debating, membership in literary clubs, edit-

ing school papers, and similar activities offer many opportunities for doing exactly the sort of thing that is done by workers outside the school. Dramatics, music clubs, orchestra, band, janitor work, care of grounds, library assisting, fire department, sanitation committee, and student accounting also are intimately connected with vocational life. Student participation in school government stimulates your growth in self-direction and helps you to coöperate as you will need to do in later life. An investigation conducted by the engineering profession disclosed the fact that the success of an engineer is far more the result of general good qualities of character than of the specific training of the engineering school. Play and recreation are of great importance in teaching you the healthy fun which is necessary to any person's life and in enabling you to discover your recreational interests and abilities. The best kinds of work are like play —Edison once said that he had never done a day's work in his life. Some high-school student organizations own their printing-presses and publish weekly papers. This offers very important training for newspaper work, or at least for the discovery of talent in that direction.

Other broadening experiences. Home offers you an opportunity to learn many of the good qualities which are necessary in all forms of work life. If you can coöperate in the efficient management of the home, and learn patience, tact, and self-control with the folks you know best, these abilities will be useful to you later in occupational life. The home offers an opportunity to do laundry work, gardening, cooking, simple repairs, and other work with tools; and both boys and girls should learn these activities. An investment of not more than ten or fifteen dollars' worth of tools will enable you to learn many processes which workers outside carry on. Again, the club work or junior achievement work carried on by the state agricultural college or other institutions is of great importance. Here is a list of the different kinds of things with which the clubs carried on by the Junior Achieve-

ment Bureau of the Eastern States League (with headquarters at Springfield, Massachusetts) concern themselves: millinery, dolls, garment-making, textile exhibits, flower-making, art and home-craft work, woodwork, rubber, basketry, chair-seating and cane work, leather and leather-craft

DID YOU HAVE A CHANCE TO TRY SEVERAL KINDS OF OCCUPATIONS IN CLUB WORK?

Courtesy of the Junior Achievement Bureau

work, paper, food-club work and canning, confections, lettering, printing, photography, tin and metal work, marble work, electrical and radio work, gardening, poultry-club and bee-club work, rabbits, and bird houses.

Miscellaneous working experiences. One of the most important means of self-discovery is obtained through the miscellaneous acts of helpfulness which you do outside your own home, and often for pay. An investigation was once made of an eighth-grade class of boys and girls, and three or four unfortunates were found who never had earned a cent in any

kind of work whatever and had hardly ever had experience even in washing dishes. Other girls had earned money caring for children and sewing and had done a good deal of housework in their own homes. One boy had built several models of ships and painted them up in gay fashion, to rent them for paint-store show windows. Another boy had had a good deal of experience in buying and selling horses. We admit that these outside activities can be very much overdone and are sometimes very detrimental to school work; yet if wisely used to discover your interests and abilities, and not just to acquire spending-money, they have an important part in your education. When caring for children you can think of all the various occupations where such ability is required; when mowing the lawn or painting a fence you can imagine yourself in that kind of work; or, Tom Sawyer fashion, you can try to be a foreman or manager.

How to use vacations. Most teachers and parents agree that long summer vacations are not at all needed, since pupils do not study hard enough to need three months' rest. An increasing number of pupils attend summer schools every year. Two to four weeks' good recreation is probably all the vacation anyone ought to need. The rest of the summer vacation may be given to work, if you can find it, and this work may be just as common and hard as you can stand. There is usually no loss and all gain from hard physical labor; it gives you a real taste of what the workers of the world do. Perhaps several of you already have had such experiences. It was recently found that 68 per cent of the Harvard College seniors have earned money to help pay their way. Do not work every summer for your own father or other relative, because part of your education is learning to work in strange surroundings. Are you able to adapt yourself to a difficult environment? As you grow older you may use these vacations for self-discovery and tryout purposes by choosing your jobs more wisely, selecting those which will give you information about the work you wish to do.

EXERCISES AND PROBLEMS

1. Occupations are sometimes described in terms of their most striking characteristics with important details left out. Show how the work of the architect is more than just drawing plans, and that of the lawyer more than arguing before a jury.

2. Give a list of different kinds of work in manual training, gardening, and home economics, and after each kind of work put the name of the occupation it suggests.

3. Tell about the good qualities of character that one may gain from student activities.

4. Tell about your working-experiences and how these have suggested occupations to you.

5. Interview a successful worker and find out how he discovered his occupational interests.

6. Two of you may prepare an interview, one playing the part of an employer and the other asking for a position and telling all about his study, preparation, and experience. Take seats at the front of the room and give your interview. Do not memorize what you are to say.

7. Tell about vacation experiences that helped you to find out about your vocational interests.

8. Tell about a plan for discovering and trying out your abilities, which you would like to carry out if you have opportunity.

9. Stage an interview in which a person is advised concerning experiences whereby he may discover his interests and abilities.

Developing character. No real discovery of your interests and abilities can be made without developing good traits of character such as will be needed in occupational life. Fortunately, all the good characteristics can be developed. We hope you are not fooled by the notion that these things must be inborn and cannot be learned. Humor, cheerfulness, tact, executive ability, initiative, perseverance, and all the other things necessary can be developed, sometimes slowly, but with certainty and success. Cases of discouragement and failure are usually due to unfortunate events, often quite early in life, which happened to start the person wrong and to

make him imagine that he would grow up inferior or discouraged or otherwise possessed of bad qualities. Roosevelt said, "Don't flinch, don't foul, hit the line hard." We have already objected to comparing life with a game; but Roosevelt's advice is useful if one remembers that he is not hitting another person but is hitting discouragement and difficulty. We have spoken of the investigation of engineers conducted by Dr. C. R. Mann. The following six groups of characteristics were outlined in that investigation, and you can easily see how these apply to self-discovery and to success in vocational life.

1. *Character*, integrity, responsibility, resourcefulness, initiative.
2. *Judgment*, common sense, scientific attitude, perspective.
3. *Efficiency*, thoroughness, accuracy, industry.
4. *Understanding of men*, executive ability.
5. *Knowledge* of the fundamentals of engineering science.
6. *Technique* of practice and of business.

Your parents can help you. Not only your teachers can give you advice but your parents as well, and sometimes your older brothers and sisters. These intimates frequently know some things about you that you have not yet discovered yourselves, and a frank talk will sometimes reveal new lessons you have to learn in order to reach the heights you wish to scale in occupational service.

Other sources of advice. If you will turn to pages 105–109, you will see there the list of possibilities we have suggested for information about occupations. The same people are interested in giving you personal advice about your interests and abilities, and these people and these agencies can be of help to you, particularly if you are well acquainted with them.

Beware of false guidance. If you will look in the advertising pages of popular magazines on mechanics or other such subjects, you will see some of the exaggerated advertisements promising sudden success. "Fifteen minutes a day," the

advertisement will say, will teach you to be a wonderful musician or engineer; or, "Cut out this advertisement, mark an X in the proper space, and you will be well on the road to success," the advertisement will declare, as if everyone does not know that the difficulties will only then begin. These false guides suggest that one can live a life of failure and then, through reading a book or enrolling in a course, achieve sudden success and a marvelous salary.

Beware also of the people who think that they can read your character by means of the shape of your head or the slant of your eyebrows or the texture of your skin. These people are sometimes clever judges of human nature, but there is no real science back of their claims.

Extraordinary talents. Some persons develop such extraordinary talents as great skill in art, or athletics, or music. There was one young man who was remarkably good at baseball while at the same time he was preparing for architecture. He became an infield player on one of the major league teams, but after a few years' play he retired. On the whole, he would probably have had a better life if he had gone into architecture. Those with extraordinary talents must seriously consider whether to use these talents as a recreation or whether to invest their whole occupational service in that field. It is a difficult question and must be decided only after careful consideration.

Analyzing vocational abilities. A great many ways are presented to analyze one's abilities, and most of them are not very valuable. Men who come to address high-school audiences will tell you all about the virtues you should develop, such as punctuality, loyalty, accuracy, and all the rest; but the difficulty is to tell just what situations in life require these abilities and what situations in *your* life will develop them. You must learn coöperation where it is required, in your present daily tasks. You certainly cannot learn it apart from ordinary living. Coöperation in a baseball team is quite different from coöperation in business.

Measuring character. A grouping of important human qualities was worked out by the Harvard Graduate School of Business Administration as follows: personality, industry, reliability, initiative, coöperation, and judgment. The students of that school are rated as exceptional, good, average, weak, or unsatisfactory in respect to each of these qualities. Now personality is developed only slowly and out of care of and attention to the little things of life. Industry means ability and willingness to work hard, and this too is learned only by attention to whatever tasks come to hand. Reliability also is developed by being reliable in each of the common tasks assigned you. Initiative is developed out of trying over and over again throughout the years to be alert in thinking up new plans and in acting before you are told. Do you wash for dinner before you are asked to, and do you do the next lesson ahead even if the teacher has not specifically directed you to? If you take this attitude toward life, you are developing initiative. Coöperation, again, is a result of the constant effort to look about you for the goodwill of other people, in the spirit of "Come on, let's do it together." Judgment is developed only by a slow process of learning to do things rightly and, thereby, of developing the habit of knowing what is right and best.

Two other important qualities often stressed are cheerfulness and courtesy. A sense of humor is a very important thing for you to develop; but it must not be a rough or cruel sense of humor, but rather the kind which appeals to all those about you—the kind which makes life richer and better rather than degrading. Willingness to put up with things which cannot be avoided—a cheerful attitude toward the little trials of life—cannot be developed merely by smiling when things go wrong, but rather by understanding that life, after all, has things worth while in it for you. Courtesy is better understood than practiced, and there is no way to acquire it except through its habitual employment.

Now, self-analysis is the ability to judge your own standing in each of these qualities. No doubt you would mark yourself excellent in sense of humor, but would your friends agree with this rating?

Can you decide what your high qualities are and which ones are low and need special attention? Unless you can do this it is not possible to say you are competent to analyze your qualities of character.

The relation of these qualities to your occupational success is far more important than would appear from some of the attempts at vocational analysis. We shall therefore explain in Chapter XX a method of marking yourself in relation to the occupations you are actually considering, and this, after all, will be a fairly satisfactory way of arriving at the truth about yourself. You can easily tell whether you are tall, short, or medium in stature, no matter what activity you are engaged in; but whether you are observant, coöperative, or accurate will depend somewhat on whether it is a question of tennis, church, home life, bookkeeping, algebra, or lawn-mowing.

Some vocational tendencies. The Division of Applied Psychology, Carnegie Institute of Technology, has described a number of exercises related to vocational traits, and often asks high-school students to mark with a cross or underline the ones which appeal to them most. We shall repeat this list, as it describes rather effectively a number of different kinds of activities and may offer some hint as to several which interest you most at this time.

1. *Growing plants*, as in farming, gardening, greenhouses, etc.
2. *Care of animals*, as in stock-raising, care of horses, etc.
3. *Operating engines*, as locomotives, automobiles, steam plants, etc.
4. *Operating machines*, as in manufacturing, using linotype, etc.
5. *Installing equipment*, as electrician, plumber, gas-fitter, etc.
6. *Construction work*, as in building, concrete work, railroad and highway construction, engineering, etc.
7. *Delicate muscular movements*, as dentist, instrument-maker, woodworker, etc.
8. *Discovering and repairing defects*, as a jeweler, automobile repairman, telegraph repairman, etc.
9. *Transporting-activities*, as railroad operation, express, mail, etc.
10. *Meeting and directing people*, as secretary, floor manager, conductor, etc.
11. *Teaching*, as in school, shop, etc.
12. *Welfare work*, as in social settlements, industrial plants, Christian Associations, churches, etc.

13. *Advisory service*, as physician, lawyer, consultant, banker, etc.
14. *Organizing people*, as in societies, in work gangs, in industrial and business concerns, etc.
15. *Influencing people directly*, as in selling, preaching, campaigning, etc.
16. *Influencing people indirectly*, as in advertising, writing, newspaper work, etc.
17. *Organized planning*, as in wholesale and retail business, managing institutions, engineering projects, etc.
18. *Scientific work*, as in laboratories, museums, in research, etc.
19. *Recording and systematizing records*, as in office work, stenography, bookkeeping, cashier, library work, etc.
20. *Entertaining people*, as musician, actor, speaker, etc.
21. *Artistic skill*, as in decorating, window-dressing, millinery, costuming, handicrafts, printing-arts, etc.
22. *Artistic creation*, as in writing, designing, composing music, etc.

Tests in specific interests and abilities. No doubt you have taken many examinations, and sometimes tests in arithmetic, writing, or spelling, which have been given in the same form to pupils all over the United States. Such tests are now being developed for high-school studies as well, and before many years you will be able to compare your work with a standard performance known from the Atlantic to the Pacific. Meanwhile all you can say about your mathematics or manual training is that your grade is pretty good or fair, without knowing very clearly what these words mean. If you are taking machine-shop work and have learned to cut a thread, it ought to be possible for your instructor to tell you whether your work is first-class, second-class, or third-class. During the war a number of tests were worked out for the various trades, and it may be possible that your shop teachers know of these tests. Thus, for the carpenter, blacksmith, stenographer, auto mechanic, electrician, and many others a definite series of questions was drawn up, to show when a person had passed the apprenticeship stage and when he had reached the journeyman position. The stenography test, for example, consisted of a set piece of typewriting to be accu-

rately executed in a given time. In those studies which are intimately related to the occupational world you can perhaps make an estimate of your ability through some such means of measurement.[1] The giving and evaluation of these tests must be carried out by another person, so that you will need to get the help of your teachers in case you wish to use them.

General tests. When a number of different abilities are tested in one examination, this may be called a general test. This is the form of the psychological examinations. The "Army Alpha" test is a good example. The first page of this test gives a number of diagrams which are to be marked up in certain ways at the direction of the person who gives the examination, with a definite time limit for each of the twelve exercises. The second test gives a number of arithmetic examples, proceeding from very easy to hard and with a time limit which makes it practically impossible to finish all of them. Test 3 is a common-sense test, such as the following: "Why do we have stoves? (1) Because they look well? or (2) Because they keep us warm? or (3) Because they are black?" The correct answer is to be marked with a cross; and there are sixteen such problems and a rigid time limit. Test 4 is comprised of forty pairs of words, such as "Good—bad" and "Little—small." For each pair the person examined must mark whether the words are the same in general meaning or opposite. Test 5 is composed of twenty-four groups of words, such as "A eats cow grass," each group to be rearranged and the resulting sentence marked true or false. Test 6 is composed of several series of numbers, like 2,2, 3,3, 4,4, and you must write the next two numbers for the same series. Test 7 is a study of relations, such as "*Sky* is related to *blue* as *grass* is related to which one of the following words: *table*, *green*, *warm*, *big*?" Test 8 is a test of general information, such as "France is in which of these: Asia, Africa, Europe, Australia?"

[1] Interesting mechanical-aptitude tests and vocational-guidance tests are published by the World Book Company.

Such a test has sometimes been called a mental-alertness test, and at other times a general-intelligence test. It is not yet clearly known whether it really tests anything except the answers to the actual questions asked; but it is no doubt true that a person who scores high in such an examination has a good deal of general cleverness, whereas one who tests very low might have some difficulty, at least with the more difficult occupations. Some day, perhaps, we shall work out a series of statements which will give one's probability of success. It is possible, for example, that if a boy's score is very low in a psychological test, he may have 6 chances out of 10 of being a low-grade toolmaker, 3 chances of being an average toolmaker, and only 1 chance in 10 of being an expert. Hence we may advise him to choose a simpler occupation, such as that of a lathe hand or of an assembler. Contrariwise, one who tests very high may have only 1 chance out of 10 of being a low-grade toolmaker, 3 chances of being an average toolmaker, and 6 chances of being a high-grade toolmaker. Possibly he should consider something harder than toolmaking, such as engineering. But, clearly, such a test cannot test perseverance, honesty, tact, and many other good qualities, and must be used with caution.

Conclusion. Our purpose in this chapter has been accomplished if we have given you some plans for solving the difficult problem of self-discovery. Many who reach threescore years and ten have not really found themselves, and make new discoveries all the way along. The great advantage which early self-discovery offers is that you may capitalize your abilities, lay the educational foundation in the right place, and thus build a better structure of vocational success than would otherwise be possible. But do not trust as final your present interests; study and gain further experiences.

Now we turn to the occupations themselves; and if you will think about yourself and your friends on every page, you will have the best opportunity possible for self-discovery.

EXERCISES AND PROBLEMS

1. Outline plans by which a person can develop and strengthen good qualities of character, such as those listed on page 119.

2. Why is it that we so frequently dislike to take criticism or advice from those we know best? How can this attitude be corrected?

3. Discuss the questions of extraordinary talents, such as those for music or art.

4. Give instances and incidents which will help in the development of reliability.

5. Give instances and plans for the development of habits of cooperation. Other students may give similar plans for the development of good judgment, and still others for cheerfulness and humor.

6. If a person wants to be a doctor but has little chance of success, what other occupations might satisfy him? The same investigation may be made for the occupation of lawyer and also of engineer.

7. What disadvantages may boys or girls experience as a result of spending most of their spare time at one thing, such as radio or automobile mechanics?

8. Discuss the situations a person may get into by failing to discover his interests and abilities. What will happen if he follows interests which are only temporary and not reliable?

9. Plan and give an interview on a problem of character development, or any other problem related to this chapter.

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For further references see the list at the end of the book. Several of the books give suggestions on discovery of talents.

PART II. A STUDY OF SOME IMPORTANT VOCATIONS

CHAPTER IX

AGRICULTURE

Agriculture and other occupations. Agriculture is of basic importance, both in its product and in its number of workers. What persons in other occupations are doing fills so many columns in the daily papers that we are apt to forget that beyond the roar of factories and crowded streets one third of all our people live on farms. Upon the work done by these people we are all dependent; for from them the miller gets his grain, the textile manufacturer his cotton and wool, the packer his cattle—in short, the necessities of life are largely a result of their daily toil.

The varied qualifications demanded for agriculture. To work with living things, to see them grow and to help them develop into as nearly perfect creatures as possible, and to feel that one is producing and providing the necessities of human existence—such an occupation to a thoughtful person must be highly ennobling. To re-create poor or worthless fruit or vegetables into delicious, nourishing, and almost perfect specimens, to improve milch cows so that one animal can produce more cream than two or three formerly produced, to make two ears of corn grow where before only one grew, to transform thousands of square miles of desert land into highly productive farms, and to put into operation such marvelous labor-saving machines as the binder, the thresher, and the tractor—such are a few of the mighty works wrought by our agricultural specialists. Clearly, to be an expert in

such profound and far-reaching activities requires natural ability, education, special training, and skill of the highest order.

THE GENERAL FARMER

By far the greater number of farmers have not specialized in growing any one of the particular products discussed in later pages under "Specialized Farming," and hence they may be termed general farmers. In this section, while we

A TRAINED FARMER AT WORK

This man understands machinery, soil, crops, and markets. He is a graduate of an agricultural college and knows how to make farming both profitable and pleasant. In the busy season he doesn't stop at an eight-hour day

shall have primarily in mind general farming in our discussion of the social advantages, of the nature of the occupation and its remuneration, and of starting and succeeding in agriculture, still much that we shall say will be equally true of the various forms of specialized farming. And since so many of our young people have a greatly mistaken notion of the farmer's social condition and advantages, we shall first of all discuss this important phase of his life work.

Social advantages. 1. *Improved transportation.* Although here and there we may find a few backwoodsmen today, the modern farmer no longer lives "forty miles from nowhere."

Railroads have crisscrossed the continent until only on frontiers are homes far from sight of train or sound of whistle. Trolley lines in New England spread out like a spider's web; Ohio, Indiana, and Illinois are served by thousands of miles of track; and other states are witnessing a similar extension of trolley service or of automobile-bus lines.

Along railroad and trolley line may be found thousands of little villages, centers of the thought of the countryside as well as markets for produce. Farmers can make trips to these villages more comfortably now than heretofore. The times are past when it took a whole day to drive the ox team and lumber wagon to town, and when getting stuck in a mudhole or breaking down on the bad roads was a frequent experience. With improved roads and with the use of the automobile and the autotruck, the farmer has found that travel has been made much easier and quicker for him than was ever thought possible. In these trips to town there is much visiting, a social activity which may develop into a farmer's grange; and much bargaining, which often ripens into a coöperative grain elevator, store, or creamery. Longer trips than to the village may include picnics, reunions, carnivals, county and state fairs, and, occasionally, an exposition or a visit to the old home. These things broaden the farmer's horizon.

2. *Communication by telephone and rural free delivery.* But even on his farm the rural dweller may link himself with the world. One of the ways of doing this is to have a rural telephone. There is a sense of community life in knowing that you can talk readily with your neighbors. In Iowa, for example, no farmer can very well feel "out of the world" when the number of telephones is about the same as the number of farms. Radio reports on weather, markets, and current news help the farmer keep up to date on world affairs.

The farmers are reading too. Rural free delivery is spreading so rapidly that there are now more than forty-four thousand routes over which mail is taken daily to those living in

the country. In addition to the local paper, metropolitan dailies and agricultural magazines are subscribed for and carefully read. Both the state and national departments of agriculture send out bulletins. In 1902 the department at Washington sent out two million of these bulletins; by 1920 the distribution, which was not equal to the demand, had increased over six times. Surely an immense amount of reading is being done on farm subjects.

3. *Improvement of social advantages.* While the social advantages enjoyed by the farmer are constantly improving, it should be added that they depend quite largely upon the particular community and the particular man. If the community is stagnating, the soil poor, coöperation dead, and the farmer, like his community, slovenly and ignorant, then, of course, his social condition will be decidedly inferior to that enjoyed everywhere by thriving, up-to-date people in other occupations. But even such drawbacks as these can in many cases be overcome, and in hundreds of instances so prosperous is the community and so successful is the farmer that he occupies a position of high social esteem in his county and very often is a respected state and national figure.

Nature of the occupation and its remuneration. 1. *Independence without large means.* In the first place, the farmer is more independent than other workers. He has no competitor trying to get his position away from him. When he becomes old he does not live in constant dread of the day when he will be called into the general manager's office and told, "I am very sorry, but we shall have to put a younger man in your place."

On the other hand, the farmer has to take certain risks which may result in a serious financial loss. Floods, droughts, unseasonable frosts, and other natural disasters which cannot be controlled sometimes destroy a part or the whole of a crop. Damage to crops by blights, insects, and animals, and to cattle by disease, is still a discouragement to many a farmer, but this is being reduced by continual study and ex-

perimentation on the part of the government. A third type of risk is the uncertainty of returns. The farmer does not know at the time of planting what the demand, and therefore the price, will be for his crop when he markets it. If he plants too large a crop of one product, he may be left with a surplus difficult to dispose of, and he may be forced to take a low price for it. On the other hand, a shortage of a crop will increase the demand for it and will bring the farmer a higher price. General farming is the safest kind, since while one crop may be a failure, others may not be. Some effort has been made, mainly through the distribution of market information by the Bureau of Markets and through the organization of coöperative selling associations, to guarantee the farmer an adequate return for his products.

The expenses of an average farmer need not be high even though he lives well. A garden, an orchard, a few chickens, some pigs, a cow or two,—and his food is practically all raised at home. If his wife and daughters are good cooks, his table may have food whose liberal quantity, variety, and wholesomeness are denied many city dwellers much more wealthy than he. Fresh eggs and vegetables, chicken and strawberries,—delicacies to the city man,—may all be his, and are his in thousands of cases.

He lives, for the most part, among his equals. Very few immigrants—in 1920 there were only one hundred and eighteen foreign-born per thousand white farm laborers in the United States—menace his standard of living. Very few idle rich rouse his envy. Naturally, since our farmers are so fortunately situated, they form the democratic bulwark of our country.

2. *Lightening the hard work of the farm.* The hard work of the farmer can be lightened, and is being lightened, by labor-saving machinery. Continual improvements in corn-growing and wheat-growing machinery have not only lessened the amount of human labor necessary but have greatly reduced the time required for plowing, sowing, and reaping.

The amount of work demanded of human muscles, and the amount of time spent in hard labor producing less than is now possible, have been steadily cut down. Gasoline, iron, and steel do not tire like muscles, and horses are cheaper than men. Rural life need not stagnate under the burden of labor. A man may be a farmer and yet advance intellectually.

3. *Increasing the yield per acre and diversified farming.* The number of bushels, and consequently of dollars, per acre

HARVESTING GRAIN WITH A BINDER

The self-binder has done more than any other one machine to save labor on the farm and cheapen the cost of our bread

can also be increased. In the medieval ages the average yield of grain was only six or eight bushels an acre. Walter of Henley, who lived in the thirteenth century, said that "three-fold the seed was an average harvest, and that often a man was lucky to get back his seed corn and as much again." But the present American yield is from three to four times this medieval yield. And our most successful farmers do not feel satisfied unless they receive at least fifteen times their seed. There are farmers, too, who prove year after year that the average yield of American farmers is a very low average indeed. While agricultural science has had a wonderful development during the last twenty-five years, our experts tell us that much greater results are still ahead of us.

Closely related to this increase in the yield per acre is diversified farming. No wide-awake farmer today raises only wheat or corn or cotton. He grows one or more of these, but in addition he raises numerous other products, such as hay, potatoes, vegetables, live stock, poultry, bees, etc. Some special consideration will be given several of these products in later pages, under "Specialized Farming."

4. *Other ways of increasing profits.* The farmer may increase his profits in other ways. One is by cutting down the marketing expense. There is considerable difference between the selling-price of wheat, corn, and other products in the city market and on the farm. This expense may be reduced and the farmer made more prosperous in three ways: (1) Securing better roads. Poor roads mean either that it takes more time to haul less than full capacity from the farm to the market or railroad, or that the resulting wear and tear on a wagon or an autotruck adds greatly to the cost of the product. The different states and the Federal government are coöperating in many ways for the improvement of transportation. (2) Holding his products for better prices. The farmer is too often forced to sell his crops as soon as harvested, for whatever he is offered. Ready money for running-expenses or better credit arrangements would help him a great deal in being able to sell his products when prices are higher. (3) Joining with his fellow farmers in a selling association—as is often done by the fruit-growers—and securing favorable rates and commissions. Better prices will be secured when the farmer is not obliged to drag his products over miserable roads and to take at once whatever he may be offered for them. By these three plans, in which great progress is now being made, the farmer becomes a better marketer.

Starting and succeeding in agriculture. 1. *Possibilities of earning a farm.* Let us suppose that you are an able-bodied young man of twenty. Can you earn a farm? During the harvest season, which comes in vacation time, it is certainly

good experience for any boy to hire himself out for the summer to an up-to-date farmer. Wages may be high enough to save something, particularly when you remember that your board, lodging, and laundry are included. Other necessary expenses, such as clothing, are not a serious item. If the farm laborer is married, with the lower rent in the country and with a garden in which to produce much of his food, he receives a larger actual wage at fifty dollars a month than the motorman or street-car conductor in the city at a salary nominally much higher. Nevertheless the prospects of saving enough for a good farm on a fifty-dollar-a-month salary alone would not be particularly encouraging.

Other ways are open. Many young men work for a while as farm laborers, learn all they can, save every dollar possible, and then begin as tenants. After farming for a few years and giving the owner a share of the crops or paying him a cash rental, they have laid by enough to purchase a small farm of their own. They may, however, buy it after having saved only a part of its cost, the remainder of the selling-price being secured to the former owner by a mortgage on the farm. The United States Department of Agriculture made an investigation several years ago, in which their correspondents were asked whether it was reasonably possible for farm laborers and tenants to save enough to buy a farm that would support a family. The replies indicated that 72 per cent of farm laborers and tenants find it fairly easy to acquire farm ownership.

Perhaps you now live in a town or small city and already have some capital. If you know nothing of farming, it is wise to go slowly. Do not be led astray by stories of wonderful opportunities "way off somewhere." The chances are ten to one that there are better opportunities near you. Nor should you invest all your money in land. Remember that there are other things to buy, such as buildings, machinery, and live stock, and that the running-expenses must be provided for until the crops are harvested. Be cautious. Spend

less than you would like to on machinery. Do not try to have a fully equipped farm from the start, but make it pay for its improvements as you go along.

2. *Ways of securing a knowledge of successful farming.* If you are planning to be a successful farmer, we advise you to complete the agricultural course in your local high school, if such a course is offered. There you will study soils, seeds, crops, live-stock judging, dairying, fruit-raising, farm mechanics, etc., which, with the demonstrations, discussions, readings, and laboratory work, will help you to become a prosperous farmer. Be sure to join one or more of the boys' or girls' agricultural clubs that are carried on all over our country, such as the corn, the potato, the gardening and canning, the dairy, and the poultry clubs. These organizations are for the most part under the direction of the state and Federal agricultural departments and are doing a wonderfully interesting and helpful work. There are decided advantages to be gained in competing for prizes offered to members of agricultural clubs and at county fairs. Many helpful directions and much instruction are freely furnished all competing club members.

After graduation from high school do not rest content with the advantages just mentioned. Some winter—the sooner the better—attend the short course at your state agricultural college. There you will meet boys from all over the state, and professors who know agriculture thoroughly. It will not cost you very much; it occupies the six to eight weeks of the slack winter season, and it will be one of the best investments you ever made. Or, better still, if you want to reach the top notch in scientific agriculture, enroll at your state agricultural college for the four-year course. Write beforehand to the college, asking for a catalogue. Look the course of study through, and see how all the tough farm problems that you never could straighten out alone are here presented by experts. Bear in mind, too, when you come to finish the course, that one of the criticisms passed upon the

agricultural college is that its graduates are usually men who are too valuable to go back to running ordinary farms, securing better positions as managers of large farms, creameries, or experimental stations. It means a great deal for any young man to have an education so practical and so much in demand as this.

3. *Adding to your success.* In whatever way you get your education, once on the farm do not go to seed mentally. Keep on growing. Subscribe for several first-class agricultural papers. These periodicals are numerous, and many of them can be depended upon as fully reliable. Good books too are abundant. Authors of such books have faced successfully the same problems that confront you; they have written down the answers, and it is a mistake not to let them help you when you are in trouble.

In every state there is an agricultural experiment station. Write to the one in your state, asking to have your name placed on the mailing-list for all the bulletins published by this station. The United States Secretary of Agriculture will mail you on request a list which tells what subjects are treated. There will certainly be several that will interest you. You can then send for the bulletins you desire, and they will be mailed you free. Keep your eyes open for new information from any source. Attend farmers' institutes. The speakers will have something of value for you, even after you have become an experienced farmer.

4. *Women as farmers.* Both in general and specialized farming, American women are making a success of agriculture. In scientific knowledge, business ability, and skill in farm management the woman agriculturist is proving to be the equal of the best. Unless she has exceptional physical strength she is likely to be more dependent on farm help for the inevitable heavy work. But this is not hard with the telephone and the automobile at hand. Many women are far happier in farm work than they would be in any other calling.

EXERCISES AND PROBLEMS

1. Give a general discussion on the topic "Why is agriculture the most important group of occupations?"

2. Select a partner to give with you the advantages and disadvantages of farming as a life vocation.

3. Choose a partner and discuss with him the question of specialization as compared with general farming. Give a debate before the class on this subject.

4. See whether you can talk with a farmer in your neighborhood. What does he say about his work, particularly the financial and marketing questions?

5. Talk with a farmer about the question of information regarding new methods in farming. What does he say about the opportunity for learning?

6. Talk with a farmer or farmer's wife about the question of social life on the farm.

7. Talk with a farmer or farmer's wife who has lived in the city. See whether you can find out the arguments for and against city life as compared with country life. Give a report to the class.

8. Find out by talking with older people about the question of agriculture during the World War. What did the farmer do to help win the war, and what were some of the conditions on the farm during the period of the war?

9. Investigate the question of coöperation among farmers and see how this affects life on the farm.

10. Investigate the question of good roads in connection with farming in your region. How has the improvement of roads changed farm conditions?

11. Investigate the question of starting in as a farmer, particularly of acquiring land for a farm. What ways have been used in your region, and which of these seems most feasible to you in case you should decide to become a farmer?

12. Study the opportunities for agricultural education in your region, including short courses for experienced farmers.

13. What agricultural clubs are conducted in your vicinity, and what is the relation between the work these clubs do and farming?

14. Stage an interview to demonstrate the work or problems of the farmer.

SPECIALIZED FARMING

There are several lines of specialized farming that you should know about, since any one of them may be developed into a substantial business. The general farmer, as was mentioned before, does not devote his entire attention nowadays to any one crop, but practices, to some extent at least,

CUTTING AND THRESHING WHEAT IN OREGON

These great machines are not so common as they once were in the West. The ten-thousand-acre grainfields are giving way to diversified farming, with better profits per acre and with homes for more people

diversified farming. He may find, for instance, that he takes more interest in fine milch cows than in anything else on the farm, and thus he may gradually become a dairyman; or he may plant a part of his farm to apples and peaches instead of wheat and to this extent become a fruit-grower. Or while the father continues to run the farm, the son or daughter may take charge of the bees and develop into a practical beekeeper; or he may give his attention to chickens and eggs and thus become the poultryman of the family.

The stockman. The stockman is a farmer who raises cattle, horses, mules, or sheep for the market. Not in all states,

however, can these be raised profitably. Considerable space is required for the animals to range over, and in some sections land is too expensive to permit this. The great range country is west of the Mississippi; while the great corn-growing region, where cattle are fattened before shipment to the stock-yards, is the north Mississippi Valley. Consequently New England has only 3 per cent of the cattle,—these being chiefly dairy cattle,—while the states leading in value of live stock are Iowa, Texas, Illinois, Missouri, and Nebraska, in the order named.

The usual scenes of cowboy life shown in the motion-picture shows are rarely true of the stockman today. He is more a farmer than a bronco-busting cowboy. Still, the life is a vigorous, out-of-door one, and the young man who is naturally a good judge of live stock and who lives in the proper region should certainly take up stock-raising in connection with his general farming. However, should he desire real ranch life and nothing else, he must go into certain parts of Wyoming, South Dakota, Montana, Oklahoma, or Texas.

The dairyman. The dairy business, unlike stock-raising, flourishes best near the great cities. New England, considering its small size, has almost twice as many cows as any other part of the United States. Should you plan to sell fresh milk and cream, care should be taken to locate either within driving distance of a good market or near a railroad or trolley line. The dairying business can be carried on profitably, however, at a distance from consumers. In this case you can sell milk to the condensed-milk companies, or make the cream, even though sour, into butter, either at home or in coöperative creameries, or turn it over to local agents of big creameries which may be two or three hundred miles away.

1. *Advantages of scientific testing of milch cows.* The past few years have shown great strides in the scientific testing and evaluation of milch cows. At times it has been found that a large proportion of cows did not pay for their feed, to say

nothing of yielding a profit. Consequently our wide-awake farmers are removing these expensive "boarders" as rapidly as possible and are filling their places with high-grade milkers, so as to make every cow in their dairies a unit of profit. "Pure-bred or grade dairy cows frequently earn for their owners from 25 to 100 per cent more than the returns received from scrubs." The number of cows that dairy farmers keep runs all the way from eight or ten to as high as one

A STOCK FARM

The owner of this farm keeps only choice blooded stock in his herd. Twice each day on a dairy farm the milk is taken by automobile to the local station, where it is shipped by express to the city

hundred and fifty or two hundred. Fewer than sixteen cows, unless you have other work, would not be enough to keep you busy and to make a profitable business. In New England the dairyman has for every cow from one to three acres of pasture, with varying amounts of tillable land. With a good system of crop rotation the soil fertility of his farm may be kept up year after year.

The work on a dairy farm is exacting, but it is not particularly hard physically and is very satisfying to one who loves good animals. For the young man who studies his business, replaces poor cows with high-bred ones, and develops his dairy along modern sanitary lines the outlook is good. The

first-class dairyman has long suffered because consumers could not readily tell his product from inferior milk. But under a better system of testing milk, inspection of dairy farms, and licensing, the high-grade dairyman is getting his proper returns.

2. *Occupations in creameries and related lines of business.* There are also many openings for young men in every department of the creamery business and related lines, such as cheese-making, ice-cream making, and city milk stations. Some of the positions are those of butter-maker and helper in the creamery, factory manager, butter-buyer, and traveling salesman for dairy products. "The country boy," says the editor of the *Butter, Cheese, and Egg Journal*, "often gets a place to work as helper in the local creamery, where he gets his first training in butter-making and in keeping things scrupulously clean. After he has saved some money, he may take the winter course for three months [in the nearest agricultural college] and thus fit himself to run a creamery or cheese factory for himself. If he can show himself industrious and reliable in a small factory, his advance to positions of more responsibility in larger factories is assured."

The poultryman. 1. *Poultry products as a side line.* The majority of the eggs are produced in the Mississippi Valley, not by professional poultrymen but by farmers to whom the business is incidental. These farmers in general pay little attention to the careful handling of eggs. The rural buyer for the commission merchants in most cases offers the same price for good and bad alike. Since the distance these eggs are shipped is often great, the time before they are consumed adds another difficulty. In Kansas alone the loss on spoiled eggs amounts to 14 per cent of the price paid the farmer.

2. *The opportunities of the scientific poultryman.* This incidental production and careless marketing of eggs by the general farmer gives the professional poultryman an opening. His usual location is either in the far East or the far West, but a first-class market can be developed near any large city.

A fancy price and a steady demand are assured whenever consumers learn that they can depend upon "strictly fresh" eggs, that are never anything but what this phrase implies. Some poultrymen enter into profitable contracts with commission men supplying a fancy trade, or with hotels and

A POULTRY FARM

The number of chickens and the amount of equipment shown in this picture indicate that lack of capital need not long deter a young man from becoming owner of such a farm

restaurants catering to the better class of diners. To one who wants to specialize in raising poultry for meat a different breed of hen is desirable, although there are several admirable breeds equally good for egg or meat production.

While the work is light, it requires careful attention to details. The capital needed is small; in fact, a start can be made on a small lot and with a limited equipment. A steady income is assured any young man or woman who makes a moderate success of this business.

Market gardening. 1. *Making the garden.* Many gardeners have laid the foundations of their future careers by helping their mothers till the back yard at home. They enjoyed working with the potatoes, cabbages, onions, asparagus, tomatoes, cucumbers, and melons and seeing them grow from tiny seedlings to maturity. Later they searched out a little plot of ground and commenced for themselves. It does not take a great deal of money to set up in business as a market gardener. A vacant lot is enough for a start, and an acre or two will supply all the work you can do for a time.

The garden should be laid out so that the necessary work can be done easily. No raised beds need be tried, since they take too much time and labor and waste moisture. Instead, after seeing that the soil is rich and well prepared, plant the vegetables in long rows so that the tilling can be done with wheel tools. Some artificial means for supplying water may work wonders with your garden, even though the farmers around you may never consider irrigation.

2. *Marketing the products.* Pack your vegetables, when marketable, in neat, small packages or baskets. Never disappoint your customers, and be careful that vegetables from your garden reach them in a clean, fresh condition.

Unless you deliver the vegetables directly to consumers,—which is impossible for most gardeners not doing a local business,—the question of marketing is more serious. In fact, it is generally easier to grow vegetables than to market them successfully. Shipments go through a number of hands—transportation companies, draymen, commission merchants, jobbers, and retail dealers—before they reach the consumer, in each case additional time being consumed; and vegetables are perishable. Each middleman, also, charges for his services; so that the difference between what the consumer pays and what the grower gets becomes larger and larger. It is estimated by the Department of Agriculture that in the case of vegetables, the producer receives only about one third of the price paid by the consumer.

3. *A career or a side line?* If you can get some of the above experiences, you will be better able to decide about your own interest in market gardening. Men and women earn good livings at such work, provided they study and achieve exceptional results.

The fruit-grower. A good way to test yourself as a fruit-grower is to begin on your home plot. If you have but little space, plant a row or two of strawberries, currants, blackberries, or gooseberries along the back-yard fence. You may have enough room for a grapevine besides, and perhaps a peach tree or two. Or your plot may be large; then see what you can do with apples, pears, or cherries. Here, of course, you must wait longer before getting any fruit. Set out first-class nursery stock, which costs so little more that it is effort wasted to begin with poor trees. Cultivate the young trees well, thinking not merely of the few small trees in front of you but of the hundreds of heavily laden trees you may have to take charge of later on. Should your efforts succeed, plan to develop your business on a larger scale.

1. *Conditions for successful fruit-growing.* First of all you will find two things of great importance: the climate and the soil, for best results, must be suited to the particular fruit. "Apples thrive best," says Professor L. R. Taft, "on a strong, sandy loam soil, or a light clay loam. Pears require a rather stiff soil, and do best in a moderately heavy clay loam. Currants delight in a cool, moist soil, and cannot be grown successfully in the Southern states. Oranges, lemons, and figs are adapted to many sections of California, Florida, and Louisiana, but can only be grown under glass in the Northern states." Your own knowledge, the experience of your neighbors, and the advice of the state experiment stations and the United States Department of Agriculture will guide you in selecting the fruits best adapted to your soil and climate.

It may be added that it is possible to modify somewhat both soil and climate. A hill, a north or south slope, a table-

land, or a valley may be selected. This land may be drained, surface-worked in the usual way, or irrigated. It may be stated further that the various insect enemies about which there is so much talk need not unduly alarm you. They can all be conquered. But if you are new at the business, do not invest your money in a fruit farm before giving these various matters full consideration.

2. *Marketing the products.* While you are studying soil, climate, what particular fruits to grow, and insect enemies, you must also think of another very important matter—the market. As in the case of market gardening, it is often easier to produce the fruit than to sell it satisfactorily. If you have gone into the raising of small fruits, such as raspberries, dewberries, currants, and strawberries, quickness of transportation and sale is essential, since these fruits are more perishable than apples or oranges. Truly surprising results in marketing are accomplished by the orange-growers and grape-growers of southern California, the peach-growers of Colorado, and the apple-growers of Oregon and Washington. The bulk of their product finds a market in the Eastern states, three thousand miles away, across lofty mountain ranges and wide deserts. It has been only by careful attention to packing, the development of the refrigerator car, and the guidance of coöperative fruit-growers' associations that this business, depending upon the opposite side of the continent for its customers, could be so successfully carried on. The fact that these details have been worked out and a business of millions of dollars developed should be an encouragement to all fruit-growers.

OTHER AGRICULTURAL OCCUPATIONS

Nurseryman. There are various other openings in agriculture, some one of which may prove very attractive to you. If you find fruit-growing to your liking, you may turn your attention to producing young trees for other farmers. By

adding numerous kinds of trees and shrubs you may become a nurseryman. If you should desire first to learn how to care for young trees, you might begin by securing a position with some well-established nursery firm. Or you may be interested in the selling department of the business first and, after being a traveling agent for a time, finally take a partnership in the firm.

Seedsman. Somewhat similar to the vocation of nurseryman is that of seedsman. It should be the ambition of every farmer to grow and select good seed, yet no general farmer or even a market gardener can afford to spend the time and effort required to develop new varieties of plants and produce numerous kinds of seeds. This is the work of a specialist, the seedsman; and certain firms, whose names on the little seed envelopes may be familiar to you, have made of it a successful business.

Beekeeper. But little capital is required to begin as a beekeeper. Two hives of bees and a limited equipment will do at the start, and if handled well they will themselves pay for whatever else is needed.

Swine-raiser. It is hard to imagine any successful general farmer who is not also something of a swine-raiser. Not much land is required, but hogs have tremendous appetites, and to solve the problem of food supply usually calls for large corn acreage.

Other positions. If you are well trained and able to run a farm with success, positions are to be had as farm manager. The large number of agricultural high schools and colleges (almost three thousand of them) demand trained teachers. A position as agricultural teacher pays well as compared with other teaching positions. And last of the miscellaneous openings in agriculture that we shall mention is government work. "There is a very strong and steady demand for young men trained in the principles of agriculture," Professor E. C. Bishop of the Iowa State College writes us, "to direct the government and state work in surveying, forestry, irriga-

tion, drainage, to serve as county advisers in the United States Farm Management Demonstration Work, and to take charge of other lines where a knowledge of the principles of agriculture is needed to direct the various lines of agricultural practice which the state and government are now so vigorously and effectively pushing." Here is a field of work which, moreover, is certain to grow in importance.

FISHING

In the census list the fisherman is classified with the agricultural group under animal husbandry. His work is very much like the work of the sailor, described in Chapter XIII. Yet there are so many kinds of fishermen, from the clam-digger to the deep-sea fisher and whaler, that one can hardly give a general description. The most common fishermen are those who go out in boats and work with nets, lines, or traps. It is a hard life, particularly in cold or stormy weather, and means intensive work for several days at a time, followed by the journey home with the catch. Perhaps the best way to find out if you are interested in fishing as a career would be to obtain an opportunity to take a trial trip.

EXERCISES AND PROBLEMS

1. Give a statement in class on the following question: How are we dependent upon the stockmen and dairymen for supplying our daily needs?

2. Give a statement on the work of the dairyman, based on the outline of eight topics on page 17.

3. Investigate the question of poultry-raising in your vicinity or in other places, and discuss how one can begin and the advantages and disadvantages of the occupation.

4. Have you ever worked in vegetable-raising, or truck gardening, as it is sometimes called? Tell how the work is interesting, and give some points on its advantages and disadvantages as a life career.

5. Why is it important for city boys and girls to know about the problems of the farms?

6. Show why it is important for farmers to know about markets, commissions, storage laws, taxation, price of land, and transportation. Is it important for them to know about politics? If so, why?

7. The apple-growers of Virginia spray their trees seven times during the season. See whether you can investigate the care of trees, and tell something of the study necessary for successful work.

8. Choose a special line of farming not otherwise discussed in class and tell what you can about the characteristics of this work as a life vocation.

9. In what ways does the work of the fisherman resemble that of the farmer? In what ways is it different?

10. Prepare a general summary of the occupation of fisherman and give it in class.

11. Discuss the relation of the work of the farmer to several different kinds of work which are described in succeeding chapters.

12. Demonstrate the work or problems of any of these workers.

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For further references see the general list at the back of the book, especially Allen, Bishop and Keller, Filene, Giles, McKinney and Simons, and Weaver.

CHAPTER X

MINING AND MANUFACTURING

MINING

Mining is classified by the Census Bureau as a separate group of occupations. It is largely centralized in about half of the states and is not very frequently carried on in large centers of population. It is not alone concerned with the digging of coal and metals but also with the sinking of gas and petroleum wells and with the gathering of salt and building-stones. The actual work of the greater number of the workers is with the pick and shovel. Mining furnishes fuel and many of the raw materials of commerce.

Mining requires an organization similar to that of the factory; namely, a financial department, an equipment department, a section to manage the labor problem, and a sales department, as well as an operating department. Often the owner, with his subordinates, manages all these departments. The clerical and bookkeeping positions are very similar to those described below for factories and railroads. The operating work in the mine is peculiar to itself, sometimes compared to agriculture because it deals with the soil, but more often suggesting the work of operating machinery. Frequently the miner must take risks, must work in the dark, and must do heavy and disagreeable tasks. His work is very unsteady, particularly in the coal fields. Work in the petroleum fields is rough, and in almost all forms of mining the workers must live in a community devoted solely to that one industry and thus away from civilization in its ordinary form. The life is not pleasant for the family of the miner, and frequently educational facilities are notoriously lacking.

Mining is also somewhat tainted with the temptation to speculation, since not even the geologists and mining engineers know when a mine is going to give out. This is not conducive to good morale for either the owners or the workers. About half of the miners are unionized, and bitter labor wars have been fought over the question of extending the union organization.

Altogether, mining presents some of the most interesting and important occupational opportunities in America today. A young man of high ideals and exceptional intelligence might well devote his life to the solving of this difficult and baffling problem of taking the metals out of the soil in such a way as to offer a better career for the miners and the owners. Both within the ranks of the union workers and on the management side men of such character are needed. If you already know something of mining through the growth of that industry in your locality, you would do well to study it with a view to devoting your occupational life to the solution of its problems.

MANUFACTURING

What Work connected with Manufacturing is Most Attractive?

A manufacturing establishment, like a railroad or a wholesale house, is a complex affair with many kinds of work to be done. There are factories for most of the objects you ever saw: soap, mousetraps, alarm clocks, canned pineapple, jelly, crackers, nails, buildings, suspension bridges, bicycles, automobiles, and ships. The census classifies manufacturing according to the following list: chemical and allied industries; cigar and tobacco factories; clay, glass, and stone; clothing; food; harness and saddle industries; iron and steel; other metal industries; lumber and furniture; paper and pulp mills; printing and publishing; shoe factories; shoe-

makers and cobblers; stonecutters; structural ironworkers; tanneries; textile industries; tinsmiths and coppersmiths; upholsterers; and miscellaneous. In addition to this list there are the skilled workers outside of factories,—many of them (as carpenters, electricians, painters, plasterers, and

INTERIOR VIEW OF A MODERN FACTORY

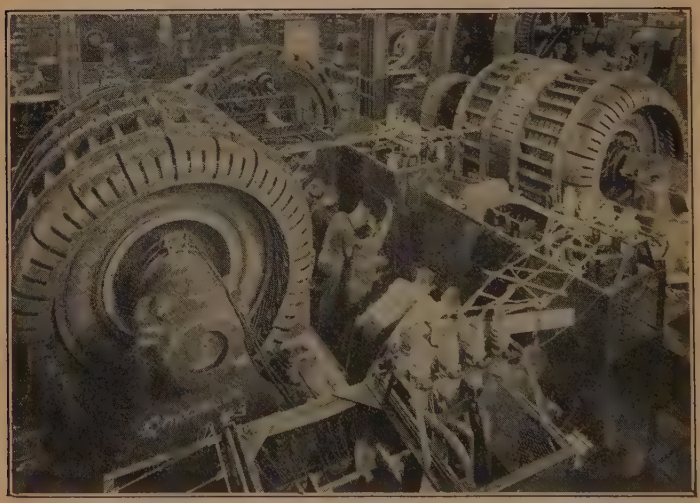
An example of specialization of labor and large capitalization. This particular factory is engaged in making electric locomotives for railroad use, especially in tunnels and city terminals

plumbers) connected with the building trades. These are manufacturers, too, but are to be discussed in Chapter XII.

Broadly considered, manufacturing has two main lines of activity: the production of goods and the selling of them. The manufacturer who can produce cheaply and sell profitably has done all that any good factory-owner desires. But to do this, of course, requires organization. Let us look first at the production side of the business; notice the great variety of opportunity offered.

The Production Department

It is on the production side of the business that manufacturing in its strict sense takes place. Perhaps you think that here every man wears overalls, handles big wrenches with greasy hands, and is making something. But production is



FACTORY WORK

Students learning at first hand how to manufacture electrical apparatus

a complicated process and covers a wide range of activities. The beginner is apt to be surprised at the great amount of work necessary in order to get ready to manufacture. There are three general lines of activity: preparing for manufacturing, the manufacturing proper, and caring for the product when made. The diagram which follows indicates broadly the scope of production. Each division will be discussed in turn, but the subdivisions only briefly, since the work of these parts is treated in greater detail in Chapter XI (Machine and Related Trades). Compare this diagram with those on pages 62 and 63.

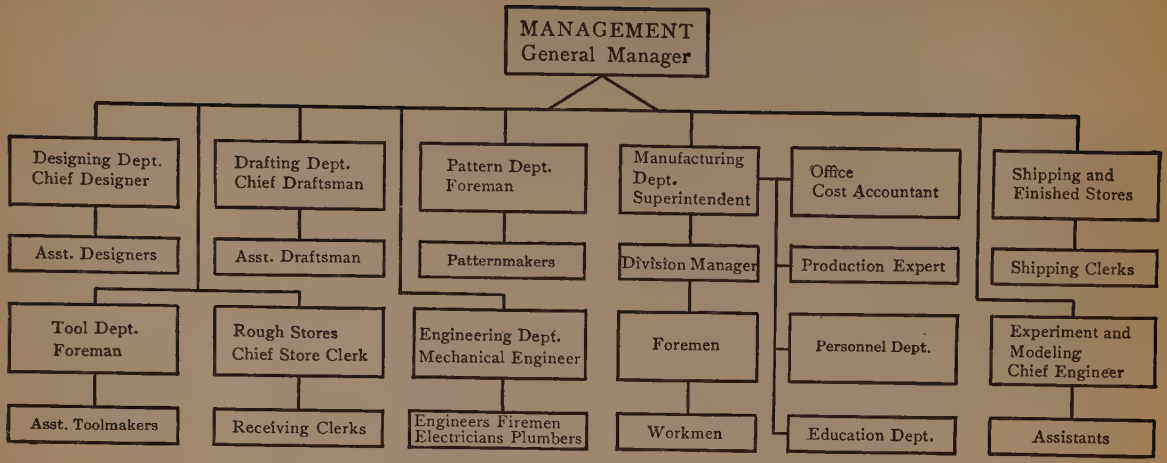


DIAGRAM OF THE PRODUCTION DEPARTMENT OF A FACTORY

By commencing at the left of this chart and noting in turn each kind of work done by the workmen mentioned, you may follow the main processes of manufacturing a commodity, from the time it is first designed until it is packed, ready for transportation to the customer

Designing. This division is in charge of a chief designer and as many assistant designers as are necessary. It is a work which requires (1) extensive knowledge of trade conditions,—of how to appeal to customers by a new-shaped shoe or automobile; (2) technical skill, the means by which the design can be realized through labor and machinery; and (3) initiative, the ability to strike out boldly, though sanely, on new lines. Such qualities, if of a high order,—especially the productive impulse, or initiative,—are rarely found combined in one person. Good designers consequently command desirable working-conditions and large salaries.

Drafting. The designs are turned over to the drafting division, where working drawings or blue prints, as they are called, are prepared. This work—if the factory is large and many different products are turned out, for each of which new drawings must be prepared—requires a chief draftsman and several assistant draftsmen. It is a vocation requiring qualifications much more limited than does designing. Many so-called designers, in fact, are really only good draftsmen.

Patternmaking. When the design for the proposed product has been approved and the blue print made, the next requirement is the making of patterns. This division is in charge of a foreman and whatever assistants he may need.

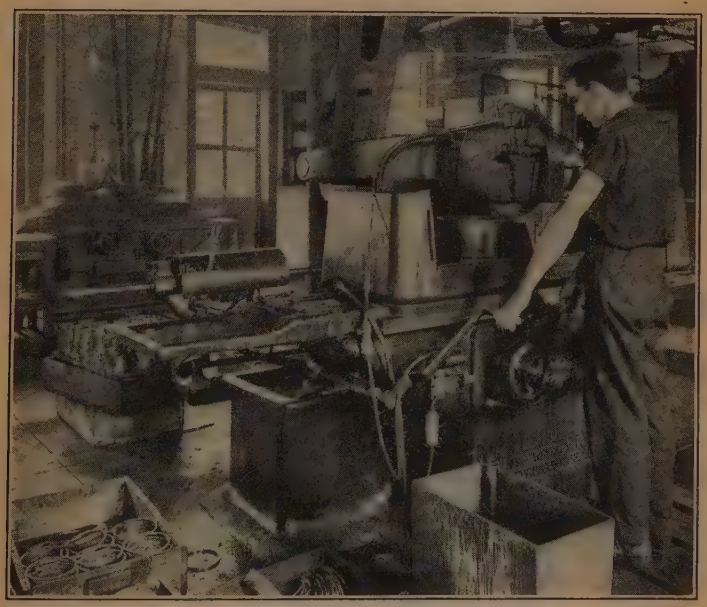
Toolmaking. The new pattern may call for new tools, the making of which is a highly important task when large orders are received requiring intricate processes of manufacture. The foreman and his assistants may construct the tools, but if the task is too difficult for them, they will receive help from others, especially the designers.

Storeroom. A constant supply of materials from which to make the articles must be on hand. These materials when received are checked up by the chief stores clerk or his assistant clerks. These clerks check out materials as needed, upon receipt of proper requisitions.

Engineering. To set and maintain the factory in operation requires power, lighting, ventilation, and sanitation.

These are the duties of the mechanical engineer. He has for his assistants the engineer, fireman, electrician, plumber, and so on.

Manufacturing. This is by far the largest and most important division of production. Many factories require no



OPERATING A DISK GRINDER

This workman is preparing piston rings for use in automobile cylinders. The high efficiency of our passenger cars and trucks is dependent in large measure upon the intelligence of men such as he

patternmaker, have no toolroom, and employ no designer. But no factory operates without a manufacturing division. The chief official in charge is a superintendent, who directs several lines of activity, which will be presented in order.

1. *Wage-earners.* In this subdivision are found the ordinary factory workers, a vast army of eight million six hundred thousand operatives. They perform all sorts of tasks, from pouring metal, grinding plowshares, and killing cattle,

to cutting cloth, sewing shoes, and printing books. Part of these workers are entirely unskilled, and upon them the burdens of industry bear heaviest. Their hours per day are the longest, their earnings per year the lowest, and, owing to the unhealthful surroundings in which they frequently work, their life careers the shortest.

Such evil conditions, however, were overcome years ago in many of our factories. Manufacturers in large and steadily increasing numbers have been providing sanitary buildings, with improved lighting and ventilation and often equipped with comfortable lunch rooms. Best of all, these manufacturers have been joining with the trade unions and the state in passing legislation which requires all factories to maintain that standard of working-conditions demanded by public opinion.

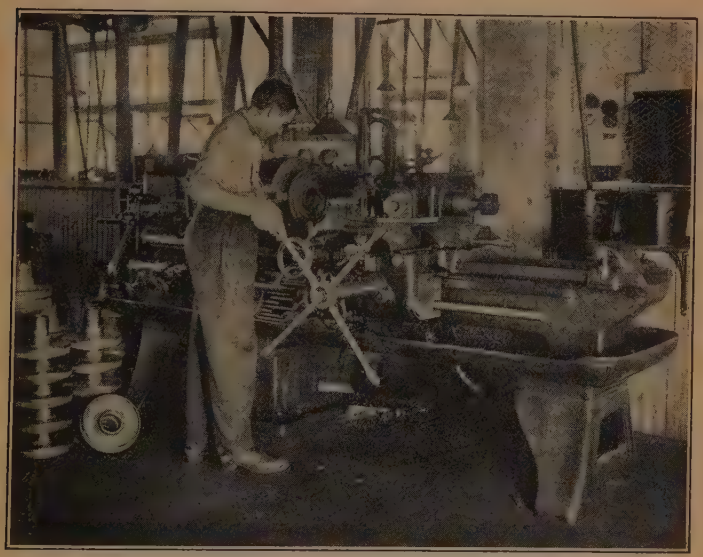
More important than this is the changed character of factory work. The low opinion about wage-earners held by some whose knowledge of factory work is limited would be considerably changed were these people to visit a number of representative plants. Large numbers of wage-earners will be found there doing work requiring a high degree of intelligence, and if one engages them in conversation he will find them not only thoroughly trained in their particular tasks but well informed on topics of general interest.

2. *Foremen, managers, superintendents.* Here and there we find a workman who shows a better grasp of factory processes than do his comrades, has ability to direct others, and is more loyal to the company's interests. He is likely to be promoted to the position of foreman, or, if these qualifications are developed to a higher degree, to manager of some room or department in the factory.

If a young man aims for an executive position, he would do well to become for a while a workman in the ranks. In the meantime let him be observant and give himself seriously to the problems of the production expert, which will be discussed next. The books cited at the end of the chapter supply

information of great value to every prospective foreman, manager, or other executive.

3. *Production expert.* The production expert is a comparatively new worker. The old-time factory management never thought of employing his services. The need for such



STUDYING A TURNTABLE LATHE

This production expert is testing a new machine under various conditions of speed, hardness of metal to be worked, and the amount of metal to be cut at each revolution. His investigations completed, he will have all the machines in this shop run according to the rules he has deduced

services today, however, is being recognized everywhere. "During the past twenty-five years," says Dr. Brisco, "American industrial and business life has undergone many changes. Increased competition has cut profits to a narrow margin, and, in order to lower costs, the managers have been driven to a study of factory conditions. The factory, therefore, is today the center of investigation and study. The wastes of time, energy, and materials revealed by this study have

amazed even the most successful managers. Efficiency, the modern watchword, demands organization, system, cost accounting, coöperation, and coördination, and touches business activities outside the factory, such as advertising, buying, and selling. No branch of industry has escaped investigation, and the result is a great awakening to the lack of method and system."

To see that the work of the factory is efficiently conducted is the work of the production expert. He is trained in scientific management. He gathers from every possible source all the information he can regarding the ways of doing some particular task, and then proceeds, like a true scientist, to determine the one best way. He next teaches the workmen this one best way. Finally, he places as much as possible of the work upon the office instead of upon the workmen. For instance, a production expert figured out to a nicety just how to assemble an engine, even to the exact number of turns to give each bolt. After this, instead of letting each workman experiment for himself, he had the office typewrite his directions and furnish carbon copies to the men. See our discussion of these problems on pages 55–58.

EXERCISES AND PROBLEMS

1. How does the work of the miner resemble that of the farmer, and how is it different? What kind of workers would succeed as miners who might not be successful as farm laborers?

2. Tell something of the problems of the coal-miners. Why is it important for us that these problems shall be solved?

3. Can you tell about safety devices and improved methods in mining?

4. Can you study the production department of a factory in your neighborhood and tell about the different kinds of work it offers?

5. Do you know what a planning department is? Why is it necessary to have such a department? What do the workers do?

6. What summary can you give of the work of the draftsman in a factory?

7. What is the difference between the work of the patternmaker and that of the toolmaker?

8. Do you know anything about labor conditions in some factory? How are questions of wages decided? Have there been any recent strikes, and, if so, what were the causes and how were the strikes settled?

9. Can you interview a factory foreman? Learn how long he has worked in the factory and how he received his promotion. What are his present duties?

10. In the same way interview other officers of the factory. Find out, if you can, what recreational or other employee activities are carried on.

11. What studies are necessary for one to become a general superintendent?

12. Demonstrate the tasks of one of the factory workers. Perhaps you can bring some tools or materials to class.

The Commercial Department

Here you will find an organization very similar to any commercial concern, though modified somewhat to meet the needs of the factory. For instance, the salesman for a packing-house or steel plant performs very much the same sort of work as does a salesman traveling for a wholesale grocery house or one selling town lots. Consequently the prospective factory salesman can read with profit in Chapter XIV, Commercial Occupations, the section on the selling department. He will also find at the end of that chapter a list of books that will prove of great value to him.

Cost accountant. Manufacturers formerly had no exact knowledge of just how much their production costs were, relying instead on experienced guesswork. But such haphazard methods are fast passing away. Manufacturers are keeping careful account of the cost of materials, labor, and overhead charges, in this way basing their success upon science instead of luck. To devise plans for accomplishing this purpose is the work of the cost accountant.

It may seem at first that the cost accountant is merely a bookkeeper. While it is true that a knowledge of bookkeeping and accounting is fundamental in his work, it is also true that the profession of cost accountant has been developed rather by production experts than by bookkeepers. To enter this field, consequently, a knowledge of general factory conditions should be gained. This knowledge can be secured in one way by working for a time in different factory positions. Added to this should be some knowledge of efficiency and accounting, which are discussed in Chapter XIV.

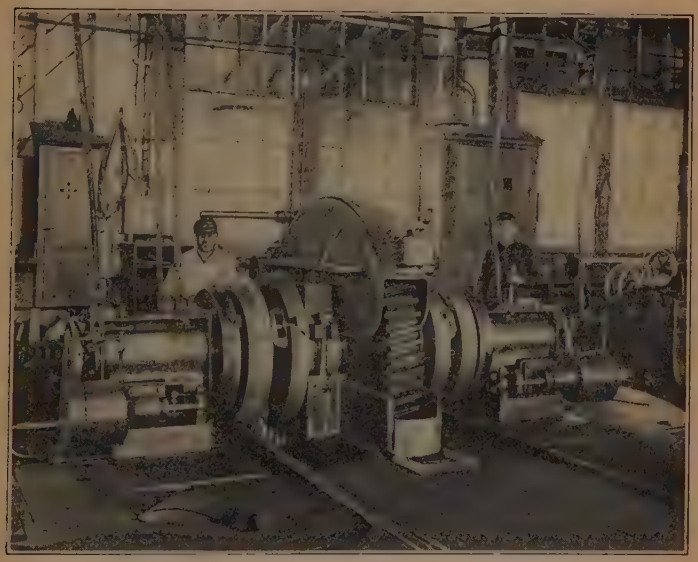
Office employees. To perform the clerical work for the production expert and the cost accountant, as well as to handle all the various records which are entailed by the regular run of factory work, numerous clerks, bookkeepers, stenographers, and typists are required. This work is so similar to that discussed under this head in Chapter XIV that no further discussion is required here.

Personnel Department

Educational and social workers. High-grade employees only can perform the efficient work demanded in many factory processes. Since skilled workmen are scarce, employers, in order to meet the demands, are in many cases developing men of their own by means of apprenticeship schools. As an illustration of what such schools are doing, the Westinghouse Electric and Manufacturing Company has a training-school for apprentices, a technical night school, and a course of training for technical graduates. In the course for apprentices the trades of machinist, patternmaker, toolmaker, and electrician may be studied. The course covers four years, part of it being shop work and part class work. The shop work is supervised by a shop instructor with several assistants, and for the class work there are fifteen teachers.

As an example of work somewhat less definitely educational, we may cite the activities of the Dodge Manufacturing

Company of Mishawaka, Indiana. Their heads of departments are supplied with books and magazines bearing on economics, mechanics, and engineering. Daily papers, current books, encyclopedias, and books of reference are placed on the library shelves. Weekly meetings are held at which



A FACTORY PROCESS REQUIRING TRAINED MEN

These men are turning wheels for railroad car trucks. They must be carefully trained, since they have charge of expensive machinery and must produce the full day's quota of fifteen pairs of wheels without mishap

papers are presented and discussed. What the Dodge Company does for its department heads, other companies attempt to do in a more limited way for all their employees. Classes for educating foremen are very common.

Another line of work includes recreation, as carried on by clubs, athletic teams, exhibits, conferences, dramatics, field days; hygiene—the movement for better light, more air, purer water, laundries, bathrooms, rest rooms; and mutuality, as seen in benefit associations, good-will associations, pensions.

In pushing to the fore all such activities, there has been developed a new profession—that of the personnel manager. He needs to be thoroughly grounded in practical sociology and to have some training in education and psychology, a first-hand knowledge of factory conditions, and the ability to work with men. This is a profession which had a marvelous growth during the World War. It includes many women.

Other Opportunities

Finished stores. When the manufacturing division has done its work on the raw materials, they are sent to the finished-stores room. Sometimes they are to be kept here until called for by the assembling-room, the finished pieces being sold not individually but as one completed machine. In this case the head of the division is called the chief stores clerk. At other times the product when sent to the stores room is already completed, and in this case the head of the division is more likely to be called the chief shipping clerk.

Experimental worker. A live manufacturer ever seeks to improve his product. He cannot wait for outsiders to come to his office with new inventions, but employs an inventor who sets about discovering new ideas in a businesslike way. Needless to say, the requirements of this man, the chief engineer, are not widely possessed, nor have schools yet learned how to develop them satisfactorily. But a technical education, familiarity with commercial demands, and initiative are qualifications of value.

Becoming a Manufacturer

Should you enjoy holding some one of these various positions we have mentioned? There are a large number of them, and while manufacturing has already made great progress, in the next fifty years it will make additional giant strides. If you like machinery, have an inventive turn of mind, enjoy

building and reshaping and making things, it is likely that you would make a success in some form of manufacturing.

Training. In your high-school course study earnestly the subjects that bear on the particular phase of manufacturing that most interests you. Are you intending to be a cost

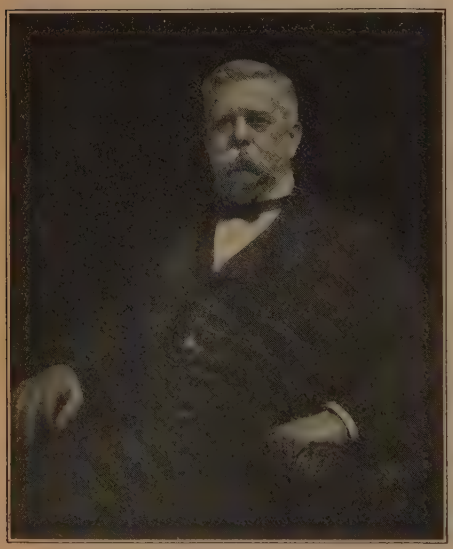
APPRENTICES AT SCHOOL

These young men are learning how to build gasoline tractors, and their teacher is the foreman standing just in front of the big wheel at the right. (Courtesy of *Factory*)

accountant? Delve deeply into bookkeeping and mathematics. If you wish to become a production expert, study your physics, mathematics, bookkeeping, chemistry, and history of commerce. But high-school courses alone will not fit you for the highest success in these positions. You should also study accountancy and scientific management.

1. *In technological schools.* Suppose, however, that you decide on manufacturing, but do not know which particular branch to select. The best training for you would be a general technical education. There are many good engineer-

ing schools, and your state university also may offer a first-class course. If before enrolling you know something at first hand of manufacturing, the advanced training will prove of greater value to you. But after graduation you may be surprised to be offered a low wage, no matter how well qualified. However, this is merely the opening: your real position is gained by means of advancement. Here one's technical education proves its superiority, for although you begin at the bottom, you will yet considerably outdistance the boy who entered the factory when you entered the technical school.



GEORGE WESTINGHOUSE—INVENTOR, ENGINEER, AND BUSINESS MAN

Two of Mr. Westinghouse's greatest accomplishments were the invention of the air brake, now used on all railroad trains, and the alternating-current electric motor. He stood for high ideals in manufacturing, and proved that such ideals can be made successful

2. *In apprentice schools.* If high school and a college of technology are impossible for you, there are still ways of securing your training. Some manufacturers maintain an apprentice school, or have entered into a coöperative plan with some Y. M. C. A. or local technical school. Fifteen jewelry manufacturers of Providence, Rhode Island, have made arrangements so that their apprentices are taught one week in the shop and the next in the public day schools, which have provided special courses for these young workers.

The National Cash Register Company has been coöperating with the Dayton Y. M. C. A., and the part-time arrangement into which the University of Cincinnati has entered with certain manufacturers has become famous.

3. *After entering the factory.* If, as may possibly be the case, all such privileges are denied you, certain other means of preparation are open to every young man. You can observe and study critically factory processes. You can read some of the books listed in this chapter, and in various ways become better trained each year. The trade unions recognize the need of their men for additional training. They are not merely strike machines, as some believe, but also great educative agencies. Unions are often alive to outside opportunities and try in many ways to improve their members, sometimes maintaining systems of instruction for the younger workmen. Here is what one of the New York unions says of evening schools:

> Local Union 247 especially desires to impress upon our apprentice members the opportunity now afforded them for advancing themselves, enabling them to get out of the rut and to insure more favorable prospects for future success than they can possibly expect by the precarious apprenticeship system now in vogue.
>
> Our union will excuse you from attending our meetings during the school term. Grasp your opportunity now. Enroll at once and endeavor to acquire proficiency in carpentry, architectural drawing, mathematics, and other studies the school affords. You will incur no expense, and your time will be spent to your personal advantage and to the credit of your associates in Local Union 247.

Advancement. "There is always a place for a man equally as large as he is mentally," the assistant superintendent of the Pope Manufacturing Company writes us. "There is no way to go across lots to success, and there is no short cut to knowledge. But there is always the long, tiresome road of endeavor, which so few follow consistently enough to arrive at any special destination that others have not attained." "The opportunity for advancement," a great steel

company writes, "will depend upon the individual." "Every person is dependent upon himself," the National Cash Register Company tells us, "and is advanced according to his ability. The company's policy is to promote from the ranks, and as a result of this there are employees holding responsible positions with this company who at one time were apprentices."

Charles Schwab's experience. Some statements given by Mr. Schwab explaining his rapid promotion from a grocery clerk at ten dollars a month to the presidency of the Bethlehem Steel Company may suggest ways in which you may advance in manufacturing:

> In the first place I always stood on my own feet—always relied upon myself. There was one thing I discovered very early—that it would be well to make myself indispensable, instead of continually looking at the clock. I thought and dreamed of nothing else but the steel works. In my own house I rigged up a laboratory and studied chemistry in the evenings, determined that there should be nothing in the manufacture of steel that I should not know. I attribute my first great success to hard and active work. I found that those who were quickest were those to be promoted. An employer picks out his assistants from the best-informed, most competent, and most conscientious. A man, to be successful even as a specialist, should have a good general knowledge, and therefore ought to read and study much; a man is always the brighter for it. All through my life I have read and studied.

EXERCISES AND PROBLEMS

1. Do you know of any vocational schools or classes which prepare for manufacturing? If so, describe them.

2. Are there any apprenticeship courses in the local factories? Are such courses for the preparation of common workers or for those in higher positions?

3. In what ways are professional people—such as doctors, lawyers, ministers, and teachers—dependent upon factory laborers?

4. Is a small shop a factory? Is a kitchen a factory? In what way do these resemble the big factories, and how do they differ?

5. What is the relationship of the government to the problem of the successful operation of factories? Has the protective tariff anything to do with factories?

6. Find out, if you can, by investigation of a factory in your neighborhood, about how many of the workers are really skilled and how many are unskilled.

7. Interview a successful worker in the factory and find out from him some of the problems as he sees them.

8. What is the relationship between factory workers and those in the building trades?

9. It is sometimes said that the foreman is the connecting link between the management and the men. Explain how this comes about.

10. What efforts are being made to introduce new kinds of manufacturing in your region? Is manufacture increasing or decreasing?

11. Illustrate the work of a factory operative.

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For further references see our general list at the back of the book, especially. Allen, Barnard, Filene, Giles, Jones, McKinney and Simons, and Weaver.

CHAPTER XI

MACHINE AND RELATED TRADES

In point of history the smith, with his brawny arms as strong as iron bands, was the first of mechanics. In ancient times he made all the implements of agriculture, of transportation, of the home (including musical instruments), of war, etc. In fact, he was practically the sole manufacturer of all articles in which metal was wholly or partly used. How simple was the life of people then; how inclusive, without being overcomplex, were his duties! Now all has been changed, and scores of tradesmen have divided among themselves the complex kinds of work inherited from the simple smith of old.

Leaving out the many variations of the mechanical trades as found in thousands of manufacturing plants, let us survey the following general scheme of work of the leading machine and allied trades:

GENERAL SCHEME OF WORK OF THE MACHINE AND ALLIED TRADESMEN

A blacksmith shoes horses, sells and repairs wagons, sleighs, and farm implements, and repairs tools, machines, etc., and sometimes even automobile trucks and cars.

Machine-shop tradesmen. 1. A *machinist* makes, assembles, and repairs tools, implements, and machines, and installs systems of machinery.

2. A *draftsman* plans the details of the tool, machine, or implement to be made, and then places on paper working drawings of the desired mechanism, with full directions of design and dimensions for the machinist to execute.

3. A *designer* is an expert draftsman whose work is to solve in detail difficult or intricate problems of the planning or designing of

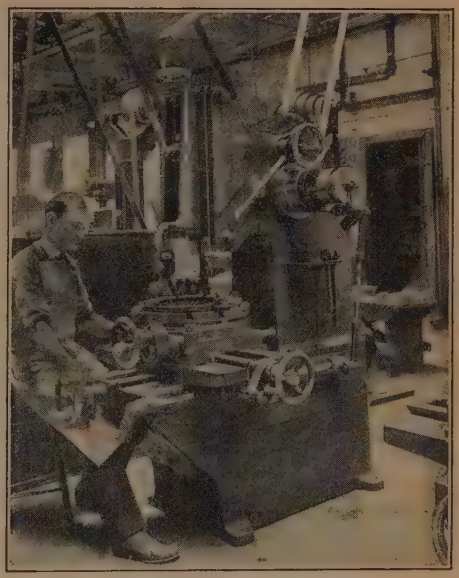
improved, adapted, or new machines, and then to make working drawings of the mechanisms designed, for the use of the other workmen.

4. An *experimental worker* tests proposed changes in the manufacture of any mechanism, with a view to correcting any defects, improving the symmetry of parts or the utility or durability of the whole, or reducing at any point the cost of production.

5. A *patternmaker* constructs wood models, or patterns, of tool or machine parts, from which a molder makes the metal castings.

Other machine tradesmen. 1. A *steam engineer* is a mechanic who takes care of the running and ordinary repairing of a steam engine and boiler in block, factory, or shop, and of the heating system or power system attached.

2. *The automobile mechanic* cleans, cares for, adjusts, and repairs automobiles, tractors, and trucks. His work has great variety.



A MACHINE TRADESMAN

He is a skilled workman, and with his dependable machine he takes pride in turning out high-grade work. On some particular jobs he works within limits of one one-thousandth of an inch. How thick is a page of this book?

THE BLACKSMITH

Nature and advantages of the trade. Among the advantages that blacksmithing offers we note the following: It provides a fairly well-rounded physical development. The constant improvements in wagons, sleighs, and farm implements, and the increasing variety and complexity of objects to be repaired, require continuous mental development.

Training. Like every tradesman and citizen today, the blacksmith should have, if possible, a sensible high-school education, including English, civics, commercial arithmetic, mathematics, science, drawing. If his father or a neighbor has a shop, the boy should help there at odd times and early become as expert as possible in mechanical work. Before becoming a journeyman blacksmith it will be necessary to qualify for the trade either by an apprenticeship of three or four years or by taking a two-year or three-year course in a technical or trade school. Since many journeymen set up in business for themselves, and take in addition the agency in their community for farm vehicles and implements, their incomes vary greatly from a meager livelihood to a comfortable living.

The machinist-blacksmith. In addition to the general blacksmith just described,—the rough-and-ready jack-of-all-trades mechanic,—there is also a sort of machinist-blacksmith who repairs tools for workmen laying a railroad or constructing a bridge or iron structural building, or who serves as a handy blacksmith anywhere in a factory where forging and general repairing are needed. Although he is a blacksmith, still his life is so different from that of the general smith that we had better think of him as a machine tradesman.

MACHINE-SHOP TRADESMEN

A few years ago a practical mechanic and expert engineer wrote in the *American Machinist*, "If you know of a bright sixteen-year-old boy, smart and independent, with snap, pride, poverty, good health, and a common-school education, and with a hankering after the mechanical arts, tell him to go into a machine shop and learn the trade."

Training for these trades. The work of the machine shop is still attractive to the bright boy "with a hankering after the mechanical arts," but unless the poverty of his family

pinches too hard he had better not enter upon this trade until he has had more than a common-school education. The boys who have had high-school advantages added to those of the shop are usually the ones that become foremen, superintendents, and other high-class experts. Instead of learning the machine trades by the old apprentice system, it is better today to prepare in a good trade school or by means of a part-time plan, with nearly an equal amount of time spent week in and week out in the shop and in a trade high school.

A FINE EXAMPLE OF THE MACHINIST'S SKILL

Every part of this engine, from cylinder and drive wheel to steam gauge and throttle valve, owes its smooth running to his careful hands. His conscientious work makes it possible for us to travel in safety even sixty miles an hour, the engine pulling a traveling hotel from one city to the next

There are today successful part-time schools connected with machine shops in a number of cities. If you should become interested sufficiently in a machine trade to follow it as a life work, by all means avail yourself of this part-time plan of training, which from the start will mean theory, practice, and wages combined in proper proportions. If this course is not possible for you, then train in a good trade school, where theory in class and practice on a large variety of actual contract jobs will give you an excellent preparation for the machine trades.

The interrelation of machine-shop trades. As the general scheme of work of the machine trades on pages 168–169 indicates, the duties of the machine-maker and toolmaker, of

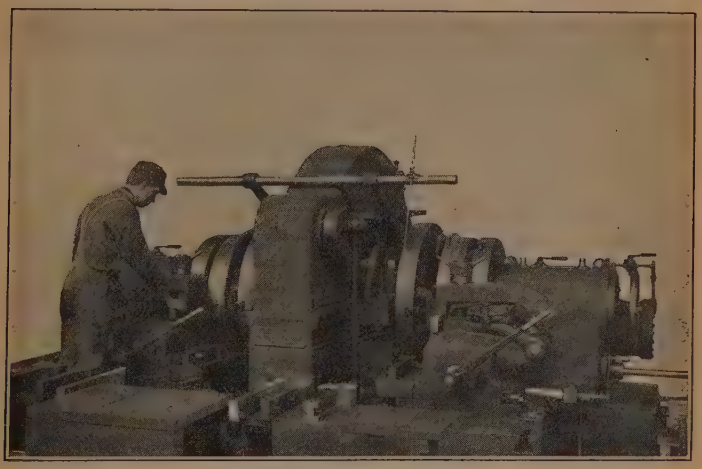
the draftsman, of the designer and the experimental worker (if the shop is large enough to require these two experts), and of the patternmaker are so interrelated and overlapping that in order to do expert work in any one of these departments the tradesman should have mastered both the theory and practical work in the other departments. Let us take up first the work of the machinist, or machine-maker and toolmaker, and then of the other tradesmen whose work overlaps and interlocks with his.

The Machinist

Our dependence upon the machinist and his associates. Handmade articles today are few and far between. This is a manufacturing age, and we are a great manufacturing people. A vast new country, rich in natural resources and production and occupied by over one hundred million consumers, coupled with Yankee ingenuity and inventiveness,—this is the basis for our enormous manufacturing enterprises. That our industrial activities require millions of tools and machines is very evident, but is the need limited to our industrial pursuits? Can a man farm without implements? Can a mason or carpenter build without tools? Can one travel or send his goods without ships or trains and tracks? Can one live at home, even the simplest life, and not use some tools or machines or some things made by their use?

The very necessities as well as the comforts of our lives depend in large measure upon machines, and hence upon those who make them. All manufacturing depends for its execution upon machinery and tools. Without the machine shops no factory could have been equipped with its machinery. All new tools and machinery are first designed, patterned, molded or forged, and made in a machine shop. All improvements upon these tools and machines are likewise made in such a shop, and so are the new tools and machines required in their manufacture.

Work of the machinist. The machinist makes the desired tool or appliance out of metal, usually from drawings furnished by a draftsman, which show every detail of form and dimension. Sometimes it is from a bar of iron or brass that he shapes the major part of the required product. Or his



THE MACHINIST AT WORK

When this workman learned his trade the only plan available was apprenticeship. For three years he served under the direction of foremen and then was recognized as a competent tradesman, a so-called journeyman

work may be to take metal castings in their rough condition and construct his finished mechanism chiefly from them. Again, he may be asked to repair or duplicate a piece of machinery too fine to be intrusted to a blacksmith. He works with lathes, planers, milling-machines, shapers, presses, and many other mechanisms, both machines and tools. The expert tradesman, capable of executing the most difficult and perfect work, has much variety in a day's activity, especially if in a small shop, and must grow constantly in adaptiveness and skill. In a large shop the work may be so split up that all-round machinists are few.

The machinist, then, makes, assembles (fits the various parts together), and repairs tools, implements, and machinery, including steam engines and electric motors, either separately or as units in a system of machinery. From his hand passes the finished product. But from the draftsman he has received his pictured orders, specifications shown in detail on the mechanical or working drawings. Let us now look into the duties of this tradesman.

The Draftsman

The nature of the work. The machine-maker and tool-maker, or machinist, executes in detail the blue-print orders of the draftsman. If these orders as found on the blue print are either not accurate in their specifications or not true to the mechanical principles involved, then the finished tool or machine will be useless. In the smaller shops the draftsman, and in the larger ones the designer, may be likened to the architect who not only designs the outside of a structure but also plans, part by part, its corresponding interior and specifies all details of its construction. If the machine draftsman or designer is like the architect, then the machine-maker corresponds to the master builder, who executes the orders and specifications of the architect. As the architect must understand in detail all the principles underlying the actual building of the house he has drawn, and all the materials that will enter into its construction, so in drafting a tool or machine the draftsman must know absolutely the mechanical principles involved, the materials to be used, and every other detail of the construction.

The meaning of expert draftmanship. To be a draftsman in a machine shop means far more than simply to be able to copy or to interpret mechanical drawings, as some boys imagine. It means in addition to this a mastery of shop mathematics, physics, applied mechanics, strength of materials, engine practice (both steam and internal combustion),

and power transmission. In order to tell others what to do or make, one should know all about it himself. So we find the draftsman a man of great value among machine tradesmen.

The Designer

Let us learn more about the designing side of the draftsman's trade, or of the duties of the designer (if the shop is large enough to employ this expert). The draftsman may not understand all the fine points about the designing of tools and machines, but the designer must always be thoroughly qualified in all the details of drafting, and he must go farther.

The problems of the designer. To illustrate: the superintendent of a machine shop, or perhaps a customer, gives the designer this problem.

> This press (used for cutting or stamping the tops and bottoms of gallon tin cans) is perfectly satisfactory except in this one particular [which is explained]. Now, we want you to design a press similar, but smaller and adapted to stamp out most economically the tops and the bottoms of pint cans, and with the unsatisfactory feature corrected.

The problem may look easy; but it means ability to apply the principles of mathematics, physics, mechanics, strength of materials, symmetry, and drawing to the end sought —a machine perfect in symmetry of parts, execution of work, durability, and economy of construction—and then to draft this on paper with all details and specifications, so that the machine-maker can construct with unfailing accuracy the desired stamping-press.

The designer's assistants. In adapting or designing a new automobile, printing-press, typewriter, locomotive, or other intricate mechanism, the designer may have the assistance of draftsmen, patternmakers, machine-makers and toolmakers, and possibly one or more experimental workers. However, we should understand that only the largest machine shops employ experimental workers, since in the smaller shops their

work is done by the draftsman and his assistants, and also that in the smaller shop the draftsman and designer are one and the same person. Now let us glance at the duties of the experimental worker.

The Experimental Worker

Nature of the work. The experimental worker is needed to test, check up, and experiment on changes suggested by the designer, or other authority, in the manufacture of any mechanism. He may try to discover a means to correct some defect in construction, to improve the product turned out by the machine, to increase its durability, or to reduce the cost of its production. Whenever intricate or extensive changes, either in the design of some mechanism or in the inner arrangement and equipment of the shop, are needed, the experimental worker may be called upon to plan and test out many of the details involved.

There are, of course, experimental workers of all kinds in many large industrial plants outside of machine shops. Edison employs many of them in prosecuting his countless inventions. Numerous chemists are engaged in experimental work in a multitude of factories, to improve the product, to lessen the cost of its manufacture, and to utilize any by-products.

Qualifications. The experimental worker may be a young mechanical engineer, preferably an experienced toolmaker and machine-maker. He may be very original, practical, and skillful, and need few directions except general ones; or he may be simply a skilled mechanical assistant who does well whatever he is asked specifically to do but who has little or no initiative. The first sort is a very desirable man, doubtless in line for promotion to the position of draftsman or even designer, while the other man secures about the average wages of tradesmen in the shop. The experimental worker must have a large amount of mechanical imagination.

The Patternmaker

But we must return to the smaller shop, the best place for the young machinist to become broadly proficient,—the place where we left the machine-maker and toolmaker and the draftsman,—and examine the work of the patternmaker.

Wherever metal castings are used, as in making tools, machines, stoves, furnaces, engines, etc., there are needed the services of a patternmaker. Every foundry requires his assistance, as all castings depend for their form upon his wood models, or patterns.

The nature and importance of the work. In his book "Pattern Making" Mr. C. H. Willard writes:

> Patternmaking today is considered one of the foremost of all the skilled mechanical trades. The patternmaker must be able to read a drawing and also to picture in his mind what the finished casting will look like when the machinist has completed his work on it; he must also have knowledge as to how the casting is to be removed from the molding sand in the foundry, where it should be parted in the flask, and when the cores are needed, the shape and size of the cores, and how to construct the pattern so that it will preserve its form and be durable. Some patterns do not need to be made as perfect as others, as only one casting may be required. In a case of this kind the patternmaker adopts the quickest and cheapest construction possible.
>
> The making of all tools and devices in cast metals necessitates the previous making of a pattern. At the present time not only cast metals require a pattern but frequently stone, brick, mortar, cement, plaster of Paris, rubber, glass, paper—in fact, almost everything that is made in odd shapes requires a pattern. Some men working at the foundry trade are so well trained in their occupation that they can make some pieces without the aid of a pattern, but such men are few.

Training. Some large concerns start their apprentice boys in the factory and pass them on to the drawing-room, enabling them to obtain an accurate and practical knowledge of drawing, which is quite as essential as the knowledge of patternmaking. Some patternmakers spend nearly as much time trying to picture in their minds how the casting should look when taken out of the sand as they do in working at the pattern, while if they had a good knowledge of drawing, much of this time would be saved.

From the drawing-room the apprentice goes to the foundry, where he obtains a good idea of the best and easiest way to mold a pattern. The patternmaker's education, then, comes from experience in the drawing-room and in the shops most closely related to the pattern shop, as well as through experience in the pattern shop itself.

EXERCISES AND PROBLEMS

1. Tell why the building of machines and their care is important to society.

2. How is machine-building different from manufacturing? Is it necessary for manufacturing?

3. Is there a blacksmith shop in your region? If so, find out about the work, and report in class.

4. Investigate the opportunity for education in machine trades in your region. What requirement is necessary for entrance? How long does it take to graduate, and what are the opportunities for those who finish the course?

5. Explain the relationship of the machinist to transportation.

6. Can you investigate a machine shop or interview a machine worker or toolmaker? What kind of work do they do?

7. Can you explain the difference between a wood lathe and a metal lathe? What is the difference in construction and in operation?

8. What is the difference between the machine draftsman and the draftsman for a factory or for the building trades?

9. What is the difference between the work of the designer in manufacturing and the designer in machine-building?

10. Explain the need for school studies for successful work in machine trades.

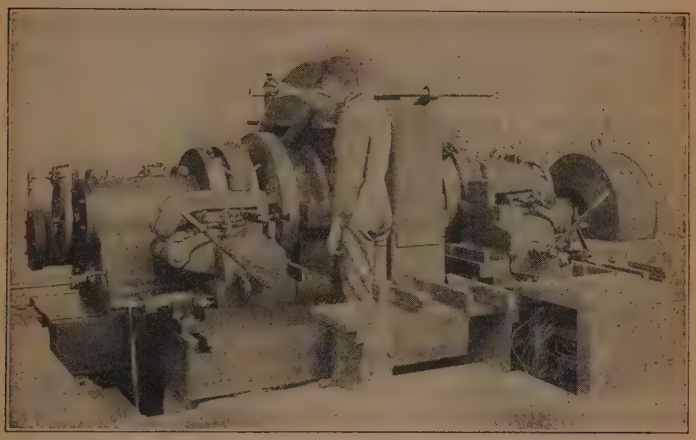
11. Did you ever see a library of wooden patterns? Explain to the class what these patterns are for and how they are used.

12. Demonstrate the work of an occupation described.

Choice of a Machine Trade and of a Shop

If you have the natural mechanical qualifications and are seriously considering following one of the machine-shop trades, it would be well for you to investigate at first hand

machine-shop conditions in your own or any neighboring city. In some shops there are so few kinds of mechanisms made that the work has degenerated into a sort of unskilled labor, while in others hundreds of different kinds of tools and machines are constructed in the course of a year, thus



TURNING CAR WHEELS

Car wheels when first fitted on the axles are rough, and must be smoothed, or "turned," so that they may roll easily on the rails. The machine here shown is very powerful, being run by a fifty-horse-power electric motor, and of course must be operated with care. Yet the man who turns wheels month after month need not be so skillful as the all-round machinist in some small machine shops where every man has to do several operations

rendering the work decidedly varied and of the sort to develop all-round, adaptable, skilled machinists. Occasionally shops are found where the machines are unprotected and dangerous, the metal dust is allowed to fly freely from the emery wheels, and the general hygienic conditions are bad. In some communities there is a dearth of good machine workers; in others the supply far exceeds the demand. Hence, in deciding what branch of machine work you would prefer, it would be well for you to visit a number of shops and see the different tradesmen at their work.

OTHER MACHINE TRADESMEN

The Steam Engineer

In this day of skyscrapers, large institutional buildings, and countless great manufacturing plants the steam engineer is as necessary as any of the building or machine tradesmen. It is he who superintends the firemen at the heating plant or manages the power house. Only a few years ago steam engineering presented very limited opportunities to the ambitious youth. Today there are many demands for technically trained steam engineers qualified to take charge of the mammoth plants producing from 1000 to 75,000 horse power, with lighting, heating, and power auxiliaries. The expert steam engineer at present holds a very responsible position, earns a good salary, and is respected as a skilled tradesman.

Preparation. The steam engineer should understand such subjects as mathematics, mechanical drawing, mechanics, heat and steam, fuel, economic combustion of coal and oil, boiler installation, engine design and management, and other topics of this nature. Such knowledge, moreover, is theoretical, and he must add to it practical experience in the handling and repair of engines and boilers.

When we consider that many steam engineers must in addition be equally proficient in their knowledge of dynamos and motors, because electricity and steam are found today side by side in city blocks, factories, and power houses, then we discover that to be a thoroughly equipped steam engineer one must have a broad knowledge of machinery, steam, and electricity. As is true of the machine-shop trades, one can best train for this trade in a part-time or full-time course, at a technical school, such as the Pratt Institute of Brooklyn, New York; the Carnegie Institute of Technology, Pittsburgh, Pennsylvania; the University of Cincinnati (part-time courses), Cincinnati, Ohio; the Drexel Institute, Philadelphia, Pennsylvania. Such courses are from two to four years in length and are less expensive per year than regular college

courses. One who has had a high-school education and has the persistence to study alone regularly for months could get an excellent training from a good correspondence school. In this case he could work days and study evenings and at odd times. Many have succeeded in this way, though, of course, it is a very difficult path to advancement.

The Auto Mechanic

A great army of workers has arisen in connection not only with the manufacture of automobiles, but also with their maintenance. One usually begins work in a garage with the crudest kind of work, such as washing and polishing machines, greasing, and oiling. He may then learn some simple adjustments and later may assume more and more responsibility for the whole car. There is a whole science related to the "rear end," and the engine is, of course, the biggest and most important study of all.

High schools give very good courses in automobile mechanics, and night schools, Y. M. C. A. schools, and certain private institutions also devote themselves to training in connection with the automobile. Here, as in other trades, the high school should be the place for you to get your start in case you choose this occupation.

Let us consider some of the characteristics of this trade. In the first place, it is a very dirty occupation, with a good deal of hard routine work which somebody has to do but which is not all interesting. On the other hand, it has certain high-class positions connected with electrical work and mechanics which require much skill and allow the expert worker to do specialized tasks. Most of the work in auto mechanics is done by men, though there are some women who are expert, and many more women who have studied automobiles enough to take care of their own cars successfully. If we were to state the whole scope of auto mechanics in one sentence, we should say that it comprises all sorts of

tasks, from those of the washer and oiler to those of the expert machinist and electrician. Perhaps the most expert man of all is the "trouble shooter," who looks over the car, diagnoses its troubles, and lays out the repairs. These repairs may require simple adjustments, or they may require the "taking down" of the entire machine,—a job which is handed over to the beginners, who do not yet know how to repair or put together again. If the work is mechanical, then a simple assembler, mechanic, or other bench worker can perform the task. It may, however, require lathe work or other machine processes, and the skill of the expert or all-round machinist is required. There is also, of course, coach-building for the woodwork and body repair of the automobile, and cloth workers and top and leather workers are required. Again, welding may be required and the use of the acetylene torch.

Tire work is, of course, likely to be the lot of any auto mechanic, and it is the inevitable task of the beginner to take tires off, find the puncture, do the vulcanizing, and put the tire into service again.

The electric work is perhaps the most intricate and interesting. Work on the starter and the magneto requires the most expert adjustment and knowledge of electricity. This is a whole trade by itself, and the making and repair of electric batteries for the automobile is another.

For small places an all-round auto mechanic must be able to do all these tasks, and he must be able to handle all grades of machines, from the lightest cars to the heaviest trucks and tractors, and able to make common adjustments on steam cars and electrics as well. Work on automobile trucks and busses is another important department of the auto mechanic's trade and requires a high grade of intelligence and responsibility. Sometimes the auto mechanic teaches beginners how to drive, and with his other tasks are often combined the selling of accessories, parts, gasoline, and tires, and the demonstration of automobiles to prospective buyers.

EXERCISES AND PROBLEMS

1. Can you visit a machine shop in your neighborhood and tell something about the advantages and disadvantages of the work? Should you like to serve all day long at the machines? Is the work pleasant? What advantages and disadvantages has it?

2. Can you investigate the work of a steam engineer or janitor-engineer in charge of a big building? Explain why the steam engineer or janitor must know about many trades.

3. Investigate the work of the auto mechanic in your neighborhood. Does he work in a big shop or a small one?

4. Can you investigate the work in a garage and repair shop to find out about what proportion of it is interesting and requires skill, and how much is routine work, such as washing, adjusting, etc.?

5. Is the occupation of auto mechanic growing or diminishing? Why do you think so?

6. Give a list of the various specialties connected with automobile-repair work and name some of the advantages in such specialization.

7. Demonstrate several different tasks of one of the workers described in this chapter.

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For further references see our general list at the back of the book, especially Allen, Barnard, Giles, McKinney and Simons, and Weaver.

CHAPTER XII

THE BUILDING TRADES

Men have never before lived in buildings so comfortable and convenient as those today, and in consequence there has never been a time when a skillful builder was more necessary and his services more appreciated. In our country we find a million carpenters and joiners, a quarter-million masons, over one hundred thousand plumbers, a third of a million painters and decorators, and, we might add, to complete this list of builders, thirty thousand or more architects and their assistant draftsmen. Who can estimate the immense service to our daily comfort of this army of peaceful tradesmen? To them we say, in Ruskin's words, with ever-increasing confidence that they will not disappoint us, "I would have, then, our ordinary dwelling-houses built to last, and built to be lovely; as rich and full of pleasantness as may be within and without."

GENERAL SCHEME OF WORK OF THE BUILDING TRADESMEN

The **carpenter** constructs the wooden framework above the foundations and builds the wooden part of the outer and partition walls, the roof, floors, doors, windows, and other woodwork.

The **mason** lays stone, brick, or concrete foundations, builds chimneys and the major part of brick, stone, and concrete buildings, blankets the iron structural framework of city skyscrapers with stone, cement, and brick, and does inside plastering and outside stucco work.

The **structural ironworker** builds the iron framework of large public buildings, factories, and skyscrapers.

The **plumber, steam-and-gas-fitter, and sheet-metal worker** attend to installing the heating, gas lighting, and sanitary systems as well as

to the roof and cornice work. Sometimes there are three tradesmen who separately look after these different parts of the work; sometimes there is but one contracting plumber.

The **electrician** wires the house, block, or factory for electricity and installs electric lighting and, if desired, power and heating.

The **painter and decorator** paints the outside wooden (and sometimes brick) surfaces of buildings, "fills" and "finishes" the interior woodwork, and papers or otherwise decorates the inside walls and ceilings.

The **building contractor** holds the contract for the entire building operation and is usually a master carpenter or mason. He is over the subcontractors, who are in charge respectively of the carpentry, the masonry, the plumbing and heating, and the electrical installation. For the smaller jobs, where no architect is employed, the building contractor may also draw up the plans and specifications.

The **architect** (usually a professional engineer and not a tradesman) draws up the plans and specifications of all large building operations, oversees regularly the construction as it proceeds, and is the deciding authority on matters of difference between the contractor and the owner. This workman will be treated at length in Chapter XVI, The Engineering Professions.

The **janitor** (not a building tradesman but every day an increasingly important workman connected with buildings) tends the heating, ventilation, and sanitary equipment, looks after the upkeep and minor repairs, and keeps the building clean and wholesome for its occupants.

THE CARPENTER

Of all the building tradesmen the carpenter would surely come first to the mind of the average boy. At any rate, most boys are builders of something—whether windmills, water-wheels, wagons, sleds, boats, or other contrivances. So when educators decided on manual training as an excellent subject for interesting boys and for developing the dexterity of their hands, they very naturally introduced woodworking into the schools. We trust that you all have been so fortunate as to have taken such a course in your grammar-school days. Now let us get better acquainted with this interesting and very necessary tradesman, the carpenter.

The rank of carpentry as a trade. Not only is carpentry pleasant because of its woodworking, but as a whole it is a high-grade occupation, healthful, stimulating, ennobling. According to a scale of measurement devised by Dean Herman Schneider of the School of Engineering, University of Cincinnati, carpentry ranks very close to the 100 per cent point. He rates the work of the locomotive engineer at 100 per cent because of its beneficial character and conditions. Let us take his analysis of the engineer's vocation and compare it part by part with that of the carpenter, noting their similarity and the reasons for their high rating:

1. "The work of the locomotive engineer is done in the open air." So is much of the carpenter's work.

2. "It provides a fairly well-rounded physical development." This is just as true of the carpenter's activities.

3. "The constant improvements in locomotive design and railway appliances generally require continuous mental development." The improvements in building design, materials, and appliances would have the same effect.

4. "Mental alertness is constantly required for emergencies." The carpenter too must keep his wits about him.

5. "A comprehensive grasp of the whole interdependent scheme of production [a railroad produces transportation] is essential." The carpenter should have a comprehensive grasp of the whole interdependent scheme of the house that is building,—his work and that of the mason, the plumber, the electric-wirer, and the painter and decorator,—as well as a grasp of the owner's wishes and personal traits.

6. "The conditions under which the same run is made are never alike." Could the conditions under which any two houses are built be exactly alike?

7. "*The work itself* breeds in the engineer the highest quality of good citizenship; namely, an instant willingness to sacrifice himself for the lives in the train behind him." To build houses conscientiously breeds in the carpenter good citizenship; namely, a constant willingness to sacrifice his

profits and to lose money, if necessary, for the sake of doing a thoroughly good job in "each minute and unseen part." Carpenters are not called upon, as locomotive engineers may be, to give up their lives, but they are expected to build honestly, even though part of their work is covered by plaster and will never be seen.

Nature and remuneration. As we have just seen, carpentry is mostly open-air work; it provides a fairly well-rounded physical development; it requires continuous mental development; it furnishes variety and interest; it breeds moral qualities. Unlike some tradesmen, the carpenter requires but little capital except credit and skill to advance from workman to proprietor, or contractor. He will take first a small job as carpenter and contractor, and then, by making a reputation as a reliable, skilled tradesman, he may advance naturally to larger and larger jobs until he becomes a full-fledged contractor.

We find its most serious disadvantages to be lack of work for part of the winter and during business depressions, and competition with less skilled carpenters, who either crowd the trade or lower the wages. However, as in most occupations, the more reliable and skilled workmen do not lose much time and are usually paid the highest wages.

At this point it will be well to explain a few technical terms. Today a young man may get his preparation for carpentry, as well as for masonry, plumbing, and various other trades, by taking a course in a special school where these are taught, or by contracting for a term of years, usually three, with a man already skilled in the particular occupation, to serve as his helper and thus to learn the trade. In this scheme, called the apprentice system, the skilled workman is termed a journeyman, and the youth learning the trade an apprentice. If the apprentice makes himself popular with the foreman by willingness to do cheerfully and carefully all that is asked of him, he will be taught many things about working from specifications, and other fine points. At

noon he can get the plans and study them in order to understand his work better. In some cities he can study architectural drawing at night school, and wherever he may be he can make himself increasingly valuable to his contractor by studying courses from correspondence schools. In many ways it is possible for the young carpenter of the right mettle to advance rapidly in his trade and make a good living.

Qualifications and school preparation. Of course, if you are going to be a successful carpenter, you must have a liking for woodwork, for mathematics (especially geometry), and for things mechanical. Quite likely, also, you know woodworking tools and have made many contrivances and repairs about the house. If this is the case you doubtless have a natural bent for carpentry.

If you should choose this trade, what would be the best preparation for it? First of all, you should complete a high-school course, paying most attention to business arithmetic, geometry, physics, and free-hand and architectural drawing. Next attend one of the best trade schools, where real contracts are being taken more and more for the pupils to work out under practically the same conditions as those met by regular apprentices, except that in the case of the trade school the "bosses" are all expert teachers. Therefore, if you have wise teachers and real houses to build, the trade school should graduate you as a first-class carpenter. Many large cities have these schools, in which the courses cover from two to four years and whose tuition is either free or very inexpensive.

If you are a high-school graduate, eager to add to your education at night and at odd moments, and if at the same time you can find an expert contractor who will take a real interest in you, then the apprenticeship system has one real advantage—you will receive wages during the three or four years you are learning the trade. In whatever way you may get your preparation, it would be well for you, in order to get into the atmosphere of your proposed life work, to talk

to carpenters about their trade and their life, to read books on woodwork and carpentry, and, if possible, to borrow at least one carpenter's magazine from a carpenter friend, and later to subscribe for it.

Fine carpentering or cabinetmaking. 1. *Nature of the work.* Until within a half-century the carpenter not only built the wooden part of houses but also made all wooden utensils, furniture, and even coffins. Gradually these articles came to be made largely by machinery in factories, so that most of this work has been taken away from our tradesmen. However, there still remains to the finer workman of the craft a portion of this inheritance—the making of elaborate furnishings and massive furniture for palatial residences and of specially designed furnishings of wood for large offices, stores, and public buildings, and the repairing of choice handmade furniture.

In every large village or city, and connected with every important firm manufacturing pianos or a high grade of house furniture or of wood furnishings for office or store, you will find one or more carpenters who are skilled cabinetmakers. While their work is with wood, it is very different in many ways from the work of the ordinary carpenter. The one is employed on fine work indoors, the other spends much of his time on coarser work outdoors. The carpenter is a building tradesman engaged in constructing houses, the cabinetmaker is a maker and repairer of fine furniture and built-in features for the interior of such structures.

Cabinetmaking is allied to one phase of the arts-and-crafts work,—furniture-making,—and perhaps somewhat less closely to patternmaking (which is treated in Chapter XI), since both have to do with woodworking. Cabinetmaking, or fine carpentering, is of interest to boys who enjoy doing exact work, who love beautiful furniture, and who are fascinated with creating artistic forms from the best grades of wood.

2. *Remuneration.* While the natural qualifications and special training of the carpenter and the cabinetmaker differ considerably, their remuneration is about the same, except that some few expert cabinetmakers who are of high artistic ability receive much higher wages. Again, the employment of the cabinetmaker may be more regular, since it is indoor work, and his yearly income may thus be greater. Then, too, there are some building carpenters who are also expert in fine workmanship; these do odd jobs in cabinetmaking and thus fill in their spare time and add considerably to their income.

THE MASON

If among the building tradesmen you naturally think first of the carpenter, you will without doubt think next of the brick-and-stone mason. As many of you know, this tradesman commonly builds chimneys, walls, foundations, abutments, etc. by laying (according to specified plans) bricks, stones, or cement blocks tier upon tier with mortar between. He also constructs entire buildings and bridges of concrete, covers the iron structural framework of skyscrapers with stone, cement, or brick, and does inside plastering and outside stucco work.

In the country carpentry is of more importance than masonry, because the woodwork in country buildings is the most essential feature of the construction. In the large structural work of the cities, however, the mason has the more important part to perform, and at times he becomes the general contractor for the whole building operation. Good masonry and structural steel stand as the backbone of the building, firm and enduring, their comparatively large initial cost insuring no further care or expense for years.

Rank of masonry as a trade. Let us see how this trade, which numbers approximately a quarter of a million workers in our country, ranks as an occupation when tested by means of Dean Schneider's scale of measurement.

1. It is largely an open-air occupation.

2. It provides a fairly well-rounded physical development.

3. The constant improvements in building design, materials, and appliances require continuous mental development.

4. Mental alertness is constantly required for emergencies.

5. The mason should have a comprehensive grasp of the whole interdependent scheme of the structure that is building,—of his work and that of the structural iron worker, the carpenter, the plumber, and the electric-wirer,—as well as a ready comprehension of the owner's wishes and personal traits.

6. The conditions under which the mason works on any two jobs are never alike.

7. The work of the mason, if honestly wrought in each minute and unseen part, is conducive to good citizenship. He renders the community a most essential service in his building operations. If, in order to do an honest job and live up to his agreements, he is equally willing to make a profit or to lose money, then truly his work breeds in him a high quality of citizenship. Like that of the carpenter, the mason's trade ranks high in these essentials of a vocation.

Advantages, preparation, and remuneration in comparison with those of carpentry. It requires at the start but little capital to advance from journeyman mason to small contractor. While the mason's employment is somewhat less regular than that of the carpenter, his wages are enough higher to make up for this. His opportunities for advancement and his social standing are about the same as those of the carpenter.

Young men planning to enter either of the two trades should have about the same natural qualifications—a liking for tools, science, mathematics, and drawing—and the same thorough high-school education. To be successful in either trade they must be businesslike, industrious, ambitious—not loafing at odd moments, but constantly, steadily forging ahead.

Actual work of the apprentice. The apprentice is taught to make the various kinds of mortar by mixing lime or cement with sand or gravel and adding water. In order to make good mortar he is trained to use the right amount of each ingredient and to mix them together properly. He carries this mortar as needed to the journeyman mason whom he serves as helper, supplies him with bricks, stone, or tools, and helps him in every way possible, while he observes closely how every part of the work is done.

It may be months, however, before the apprentice is trusted to lay any bricks or stone in an actual structure, although much depends, of course, upon how quick the young man is to learn and how careful he is, and upon the willingness of the journeyman to have his helper advance in learning the trade. Step by step the apprentice advances from mortar-mixer and general helper to brick-and-stone-layer, at first on very simple pieces of construction, up through more and more difficult and responsible parts of the work, until after three years, as a rule, he becomes competent to build any ordinary structure of masonry and is thenceforth known as a journeyman or master mason.

Perhaps it cannot be stated too often or too vigorously that practical tradesmen do not want in their employ young men who are at all superficial in their general education or in the special training received for their trade. These sensible men do not care what you know, but what you can do, and what you will do when given an actual job.

The contracting mason. The tradesman who receives wages is, of course, working for another man, but if he is ambitious and self-reliant he may, if all goes well, after a few years become his own boss and himself hire workmen. Since contracting is a business enterprise, whether carried on by carpenter, mason, or any other tradesman, it is impossible to state what income one could expect as a contracting mason. He might make a few hundred dollars one year and lose it all the next, or he might steadily add to his capital,

clearing a few hundred dollars from nearly every job until he had acquired a fair-sized capital. As it is, throughout our country there are many prosperous contracting masons who have accumulated considerable property. To the right man, first as journeyman and later as contractor, the mason's trade offers many advantages and ranks as a desirable vocation.

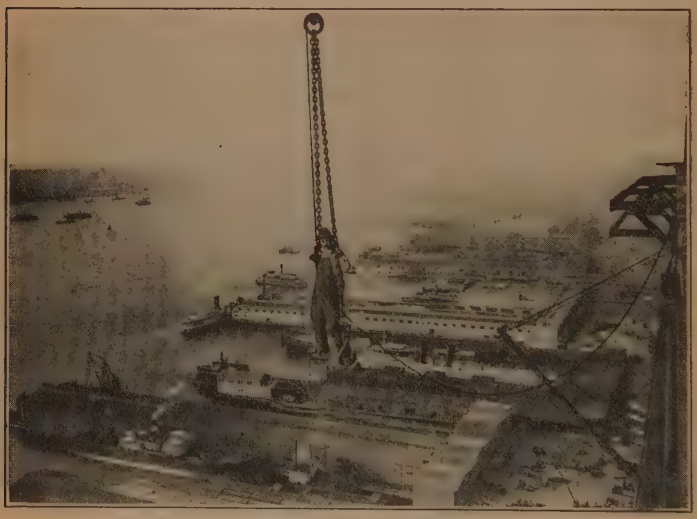
THE STRUCTURAL IRONWORKER

Increasing demand for skyscrapers. As land soars in price, the buildings upon the land must also soar in height. While this rule is practically universal, its results are most interesting on or near the island of Manhattan, New York. In 1909 we find completed the highest structure of steel and masonry hitherto attempted, the Metropolitan Life Insurance Building on Madison Avenue and 24th Street, New York City, extending fifty stories above the sidewalk. Since then the Woolworth Building, on Broadway and Barclay Street, the highest building in the world, has been erected, towering fifty-five stories above the street, or seven hundred and fifty feet in all. Some authorities declare that there is no good reason to suppose we have nearly reached the limit of perpendicular construction, assuring us that we may expect much higher skyscrapers in the future.

Carpentry and masonry alone, however, would never make possible such colossal buildings. The building's real support is an inner framework made of steel bars and plates riveted solidly together by the structural ironworker. While you may never care to enter the ranks of these so-called "cowboys of the skies," still they are so necessary to the building of huge city blocks that we must look into their work.

The work of the structural-iron builder. The task of the structural-iron builder is to raise by means of engines the steel trusses, girders, and beams, some weighing even twenty tons apiece, put them into place, and rivet them fast as parts of the whole skeleton of the building.

Besides the usual dangers of this work, or perhaps to add to them, the men are urged on with their building operations under tremendous pressure. Think of a massive granite-and-brick fireproof skyscraper covering two thirds of a block being urged upward at the rate of a story a week! But such has been done. The men work in day and night



AT WORK ON A SKYSCRAPER

The ironworker can see far below him people on the street, and at his right the Hudson River and ocean liners at dock. Only men of steady nerve can work at such dizzy heights

shifts so that no time shall be lost; for do you realize how great would be the daily or weekly interest on the millions of dollars tied up in such an enterprise? It is estimated that the Woolworth Building complete cost $15,000,000. At 5 per cent the annual interest on this sum would be $750,000. What would be the loss for every day wasted in completing this structure?

Preparation and remuneration. The qualifications for a successful ironworker are rather more than those for other

trades. He must be sober, cool, level-headed, quick of sense and action, daring but still cautious. As for education, he must understand working from blue prints and know something about the mechanics of building. The graduates of manual-training high schools advance more rapidly to the positions of greatest responsibility and pay. The new recruits, for the most part, come from the ranks of bridge-builders, sailors, and circus men, and after some experience the "housesmiths" receive somewhat more than other building workers. Naturally, however, their employment is somewhat irregular.

Probably very few if any of you will choose structural ironworking for your vocation; but since the services of these men are so necessary in our cities we should at least know something about their lives, and we should do our part, whether from within their ranks or from the outside, to have their calling made as free from danger as possible. These men, like railroad employees and others engaged in any hazardous occupation, should be urged (and, if necessary, encouraged by reward) to practice "safety first," and then their employers should be forced by public sentiment and penal statute to safeguard in every way possible their building activities.

EXERCISES AND PROBLEMS

1. Is the number of carpenters increasing or diminishing? What substitutes for carpentry work are being used?

2. Show how the carpenter is the central man in house construction. Indicate how all the other workers are dependent upon him.

3. How can one learn to be a carpenter in your neighborhood?

4. Interview a carpenter or contractor, asking particularly about the opportunities for advancement from the trade of journeyman carpenter to that of foreman carpenter or contractor.

5. Find out the relationship which exists between the carpenter and the architect and explain to the class how these workers must coöperate.

6. Can you bring a blue print to class, to explain some of the reasons why the building-trade workers need to be able to read blue prints?

7. What are the different kinds of work in carpentry? Show how some grades of work are like the work of the cabinetmaker.

8. Interview a bricklayer, if you can do so, to find out about the regularity or irregularity of his employment. How many days a year does he work?

9. What are some of the advantages and disadvantages of the work of the bricklayer or mason?

10. Find out whether there are apprentices in the trade of mason or carpenter in your region. Report in class, telling something of the work the apprentice has to do.

11. What is the nature of the work of the structural ironworker? Are high-school students likely to enter it?

12. Show how people in the country depend upon the structural ironworker who constructs buildings for the city.

13. What safety precautions might be taken to make the work of the structural ironworker safer?

14. Demonstrate the work of one of the builders.

THE PLUMBER

Nature of the work; remuneration. In his book "What shall Our Boys do for a Living?" Mr. Charles F. Wingate writes:

I would strongly advise young men to become plumbers. A first-class plumber must understand both the theory and practice of sanitary science. He ranks with a machinist or an engineer. Within a very few years the trade has been revolutionized, and there is a growing demand in all parts of the country for capable plumbers. A young man who is master of the trade has a great advantage over the ordinary, ignorant, unscrupulous plumber, and should have no difficulty in getting plenty to do.

Not only is there a steady demand for new buildings in all parts of the country, but repairs and alterations are also going on continually, and the plumbers who can give satisfaction to customers easily succeed. One of them told me he had not lost a week's work in thirty

years. He said there were four men in his shop who received fifty cents a day extra because they could follow plans and specifications correctly, could measure and order exactly what materials were needed, were able to explain clearly to customers just why certain things should be done, and could act with discretion in emergencies. Such practical sagacity and "gumption" count for much. The timid and indifferent workman who blindly follows orders when he knows they are wrong or need to be modified is the first to be laid off when work is slack.

Plumbing is, on the whole, healthful and mentally stimulating and offers a good livelihood to sober, industrious men of a mechanical turn. Because of the great variety of conditions and the often perplexing difficulties under which systems of plumbing, ventilation, and heating must be installed, the plumber requires much mechanical resourcefulness, which at times amounts almost to inventive genius. To the right sort of plumber there is steady employment, pay fully as good as that of the carpenter or mason, and the opportunity of at least steady, if not rapid, advancement. Many capable plumbers have advanced to contractors and dealers in plumbers' supplies, while a few have worked their way up to the position of sanitary engineer.

Natural qualifications and preparation. If you aspire to become a master plumber, you should be of a mechanical, almost inventive turn, and not averse to soiled hands, face, and clothing, or to dirty work that may interest or absorb you. You must not shrink from dimly lighted, ill-smelling, damp places if your work of properly installing a system of heating or of sanitation leads you there. Like the prospective carpenter or mason, you should have a taste for geometry, science, and drawing, and, if possible, should complete a high-school education before beginning to learn the plumber's trade. In connection with your high-school course you should emphasize mathematics, science (particularly physics and physiology), mechanical drawing, and English composition.

It is well to test your supposed liking for plumbing (or any other occupation) by doing, if possible, some work at odd times in the trade itself. There are today many good trade schools where plumbing is taught on real contract jobs in two-year and three-year courses. Enroll in the one most convenient, and consider yourself a real employee, ever alert to serve your employer to best advantage; and after completing the course in earnest fashion you will soon be receiving a journeyman's wages and be well on the way to becoming a prosperous contractor or a successful sanitary engineer.

THE ELECTRICIAN

In this day of electric lights in practically all modern buildings and of electric power in many blocks and factories, there is a great demand for well-trained electricians. There are many kinds of electrical workers, but here we shall treat only the one that is closely allied to the building tradesmen — the one who wires our buildings and installs the lights and, if desired, electric motors and heating equipment. Because of the great danger of fire from defective wiring of buildings, there is a code of strict rules (made out by the National Fire Protection Association) which in many states the electrician must observe.

The prospective electrician requires a thorough technical training, as well as much practical experience gained under skilled instructors in wiring for and installing bells, annunciators, arc and incandescent lights, motors, etc., before he can start as an independent journeyman. For many of us the service of this tradesman is as necessary to our comfort in the evening as the light of the sun is in the daytime. Because of the conveniences in our homes provided by the practical electrician, he easily deserves in our estimation a place by the side of the plumber.

Natural qualifications and preparation. If you think of becoming a practical electrician, one who understands thor-

oughly the work of wiring and of installing electric lighting and power, you should first of all have an absorbing interest in electrical devices of all kinds. This includes, of course, a mechanical bent and some mechanical ability.

In your high-school course you would naturally specialize in mathematics, mechanical and architectural drawing, and physics, especially magnetism and electricity. While attending high school and after graduation it would be well if you could serve for a time as a helper to a local electrician in order to get in touch with the practical side.

THE PAINTER AND DECORATOR

Training. In painting and decorating a home or other building, how essential that the master decorator should be well educated, cultured, and well grounded in the technique of his art! So, while the ordinary painter and paper-hanger has been getting along without even a high-school education or the special preparation for his trade gained from a trade school or from a full term as apprentice, it seemed a most auspicious step forward when Columbia University recently dignified the study of interior decoration as a profession by according it a place in the curriculum by the side of architecture, engineering, law, and medicine.

General conditions of the trade. To come nearer to present conditions of the trade, however, let us read in part what Mr. J. C. Skemp, Secretary of the Brotherhood of Painters, Decorators, and Paper Hangers of America, recently wrote in answer to questions concerning his trade.

The most serious disadvantage of this trade is lack of steady employment, as many painters and paper-hangers lose considerable time through the winter months during the dull season.

The demand for regular employment is better in large than in small cities, and painters as a rule average about nine or ten months' steady work during the year. The average active career of this vocation is about twenty-five years. The opportunity for advancement is rapid.

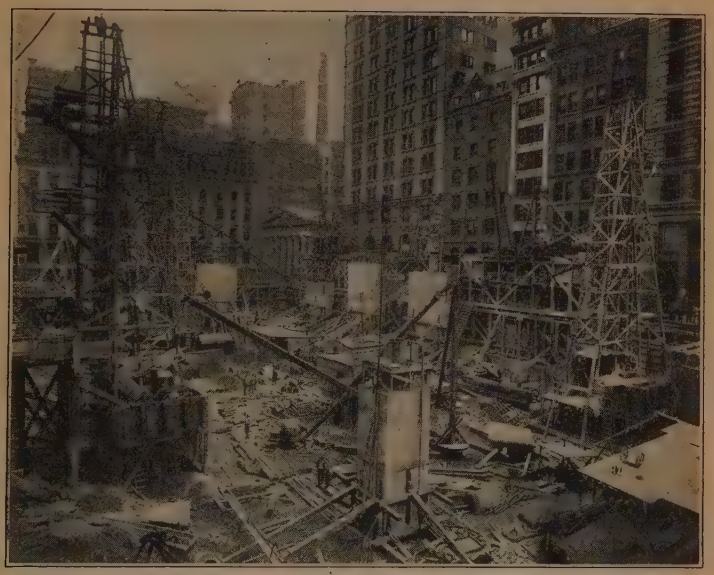
No special qualifications are required except for decorator. Decorators should have a natural aptitude for drawing, and many have become experts through lessons obtained by correspondence courses. No great amount of general education is required, although a general knowledge of minerals and painting-materials is beneficial. In some cities, especially in Chicago, schools have been established by this brotherhood for teaching apprentice boys the trade of decorating and paper-hanging.

A brighter outlook. We are glad to see that the dangers of disease from painting and decorating are being investigated and as fast as possible prevented; probably all of them are preventable. It is a most hopeful sign that courses of instruction in this trade, which has the power of making our homes beautiful and delightful, are being established; and doubtless before long there will be many excellent courses of this sort throughout the country. The public must appreciate more fully the valuable service rendered by the decorator, and, after providing adequately for his health and demanding an increasingly higher grade of work, it should pay him more liberally, or more fairly, for his services. We hope that with these improvements and advantages the trade of painter and decorator will soon take its rightful place near the head of the building and allied trades.

THE BUILDING CONTRACTOR

Nature of the work. When he has received from the owner the contract to construct a certain building, after a definite plan, to cost a set amount of money, the building contractor, as the executive in charge of the job, has the excavation dug, the foundations laid, the superstructure reared, the building roofed and inclosed, and the interior finished and equipped. In very truth he is the real builder; and as the building grows from day to day until it takes shape in its every detail and he turns it over to the owner, he must feel much satisfaction in creating from materials, with the help of his men, a magnificent house or a substantial block.

Such a building contractor is a business man rather than a tradesman, though he must understand his own trade well and all the other trades coöperating in the work. A successful contractor, it is seen, is much more than a journeyman



THE BUILDING CONTRACTOR BEGINS WORK

The foundations here shown rest upon solid rock, extending to an average depth of 85 feet below the street curb. Upon this was erected the structural steel framework shown in the frontispiece, 35,000 tons of metal held together by over a million rivets and extending above the street for 40 stories. To this structure were then added 19,000,000 bricks, 85,000 barrels of cement, 5000 windows, and 48 elevators. It is now considered the finest office building in the world, able to house in comfort over 15,000 persons

carpenter or mason: he has to be proficient in the various building trades, accurate in computing the cost of the materials and labor required, skillful in buying the materials and in selecting his workmen, and forceful and tactful in pushing forward the work so as to avoid unnecessary delays, which mean loss of money.

McKinley Junior High School

Advancement and remuneration. Some excellent journeymen carpenters and masons do not have the education or the business ability to be building contractors. But since at the top of the ladder is the successful building contractor, is it not worth the while of every prospective carpenter or mason to see to it that he secure sufficient education, that he be not satisfied with a mastery of his own trade merely but that he extend his knowledge to cover the other trades involved in construction work, the cost of building-materials, how to buy most advantageously, how to get on well with men, and how best to secure rapid construction work?

Such is the situation. As for the remuneration, the expert, businesslike contractor has excellent opportunities for gaining not only a good living but even a fair degree of wealth, and many are the prosperous building contractors that can be found in almost any section of our country.

Relation to architect. Sometimes in the smaller jobs the building contractor selects or adapts from magazines or books the plans and specifications from which to build, or he may contract to duplicate some actual building selected by the owner. But on all the more important building contracts today there is employed an architect who plans and designs the building in all its parts, inside and outside, to suit the requirements and desires of the owner, and who specifies the materials which are to be used and the methods of construction which are to be employed, these specifications then being executed in detail by the contractor. The architect also oversees regularly the construction as it proceeds, and should there be any differences between the contractor and the owner he is the deciding authority. However, as the architect is not considered a tradesman but a member of the engineering profession, we shall not discuss him further now, but study his vocation in some detail in Chapter XVI, The Engineering Professions. Since the architect is the only professional man concerned with building, he is necessary for all well-conducted jobs.

THE JANITOR

Necessity of special training. We agree heartily with Dr. Helen C. Putnam in her book "School Janitors, Mothers, and Health" when she says:

> The training and testing of caretakers of school premises is as logical and imperative a need as is that of teachers, nurses, librarians, and drug clerks, or of housekeepers, cooks, and other domestic workers. . . . It is a vital factor in problems of school hygiene, and is likely to be the most effective means of educating other school officers in sanitation.
>
> Among the teachers of janitors it is desirable to include instructors from schools for nurses and domestic science, as the service required is technical and practical, to be held to definite standards which thus far have been demonstrated in these two lines of education. In addition, health officers, biologists, and instructors in physics and chemistry can be of service in creating standards and testing results. It is also important to secure the coöperation of these men and women in establishing classes for janitors on a permanent basis in the right educational institutions.
>
> Every large city has several hundred janitors, not of schools alone, but of apartment houses, office buildings, theaters, churches, and entertainment halls; also Pullman porters, train and street-car conductors, hotel managers. With different grades of examination, as in the United States postal service, this course can be adapted to each form of custodial care.
>
> We are seriously afflicted by unsanitary public buildings (including schools) and conveyances. The public good demands that educational and health standards be introduced in these important occupations that have been mentioned.

Employment of trained janitors. A few cities already have placed janitors under the civil service, where examinations are required before appointment. Without doubt very many cities and quite likely many of our states will in the near future require of prospective janitors of schools and other public buildings training not only in caring for a boiler and running an elevator but also in proper heating, ventilation, and sanitation of buildings, and will then issue licenses and give appointments only to those found proficient.

Attractive possibilities of this occupation. At any rate, now that so many public buildings are palatial, have pneumatic cleaning appliances so that sweeping and dust are practically eliminated, and provide many other conveniences for caretaking, and with the increasingly attractive salaries paid the janitors, would it not be worth while for some of our boys to consider seriously this vocation?

EXERCISES AND PROBLEMS

1. Summarize the characteristics of the plumber's occupation.
2. Compare the occupations of the plumber and the electrician.
3. Can you investigate the laws which regulate the work of plumbers and electricians? Describe these laws briefly.
4. Describe the work of the painter, house decorator, or paperhanger.
5. What are the advantages and disadvantages of having houses built by contract?
6. Explain the occupation of contractor. What risks does he take?
7. Tell something of the advantages and disadvantages of the work of the janitor.
8. Does your school janitor teach his work to any of the students? What custodial tasks can students learn?
9. What other kinds of workers are connected with building? Describe the work of one of them.
10. Explain how the work of builders varies in different climates.
11. What is the relationship between building-workers and agriculture?
12. What is the relationship between building-workers and those engaged in commerce and transportation?
13. Demonstrate the work and problems of one of these callings.

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Shaw, Frank L. The Building Trades. The Survey Committee of the Cleveland Foundation, 1916.
For further references see our general list at the back of the book, especially Allen, Barnard, Giles, and Weaver.

CHAPTER XIII

TRANSPORTATION

STEAM RAILROADING

Different phases of railroad work. When someone says "railroading" you may think of an engineer leaning out of his cab window, a brass-buttoned conductor, or a brakeman on the top of some freight train. Yet there are many other kinds of workmen, a fact which indicates a considerable variety of openings. We can, perhaps, present this broad field of railroading most adequately by answering the question What services must be performed by the entire organization of a railroad company? (1) Roads must be built; bridges thrown across streams; stations and section houses constructed. And after these are completed they must be kept in good repair. In addition, a large amount of equipment, such as engines and cars, must be bought and also kept in repair. Then these engines and cars must be made up into trains, manned, and run over the tracks. These activities constitute the most conspicuous phase of railroading, but they are only one part of it. (2) Business must be secured from shippers and passengers, and charges made. (3) Accounts must be kept with as much care as in a bank or department store, legal matters must be attended to, and the enterprise must be financed. (4) Supplies must be purchased, real estate bought and sold, insurance taken out, and various relief policies worked out in connection with the employees. To see that these four general duties are properly performed, the railroad organizers create separate departments. These will now be discussed in turn, and openings for young men and young women will be pointed out.

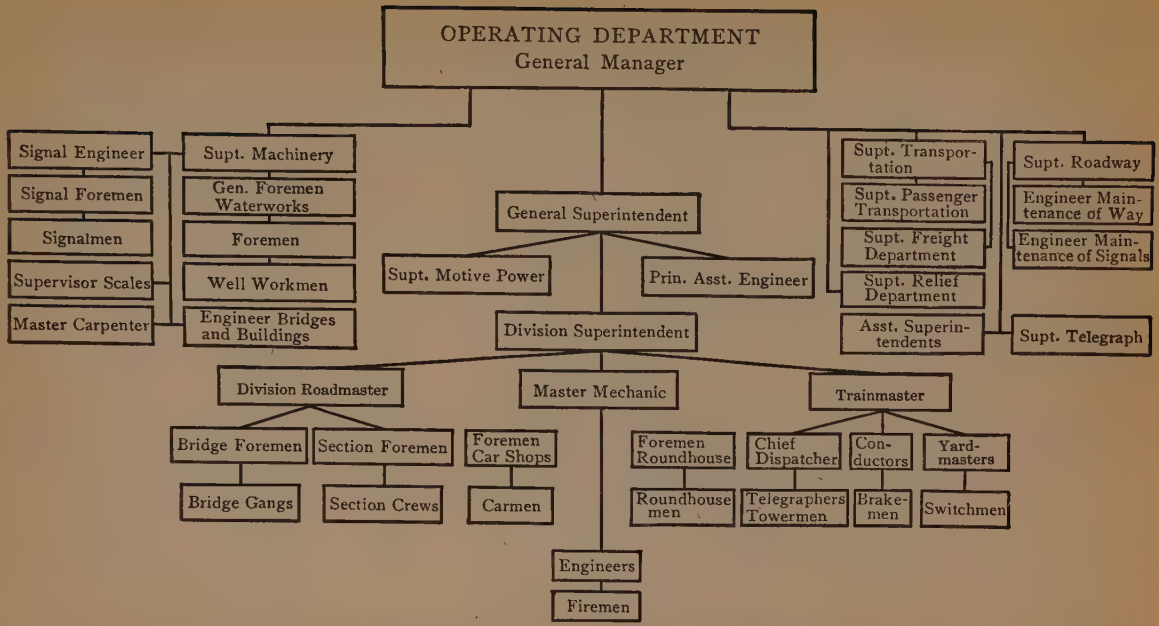
Operating Department

The operating department is the most comprehensive unit in railroad organization. Different companies vary somewhat in the way they have organized this department, but the following diagram sets forth the general arrangement. Study this chart with care and find answers to such questions as follow: Who is the chief official? What executives are responsible directly to him? Over how much of the road has the general superintendent charge?

If an engineer and fireman take charge of their engine at a certain town, they do not run through to the end of the line, but stop at the next division point; one division is their run for the day. Here they rest for several hours and then return, hauling a second train back to their home town. This shows how roads are broken up into divisions. Who is the chief official of the division? Over what subdepartments has he charge? There are three main parts of the operating department, each of which will now be described briefly.

Roadway subdepartment. The roadway subdepartment is under the direct management of the division roadmaster. As a general rule he does not take charge of the construction work, this usually being let out by contract and performed by workers other than railroad employees. The same is true of the driving of new tunnels, the erecting of large new bridges, and, in some cases, the erecting of new buildings. Consequently boys interested in these forms of construction work should seek a position with some contractor specializing in railroad work.

1. *Work of section and repair men.* The lowest grade of employees under the roadmaster are the section men, or track laborers, each gang of whom has charge of keeping in good condition some six to eight miles of track. While the work is hard physically, it is out of doors and healthful. The lower positions are often filled by uneducated foreigners, but most roads employ also promising young Americans, as assistant



THE OPERATING DEPARTMENT OF A RAILROAD

The railroad company marshals its employees like a great army, each department and each man being assigned definite duties for which they are held responsible

foremen, in order to train them for the foremanships. Closely related to the work of the section men just mentioned is that of bridge-repair gangs, ballasting gangs, pile-driver gangs, as well as of those working with concrete, upon buildings, or in the water service. These activities offer good opportunities to learn the more desirable construction work.

2. *Signal maintainers.* The signal department provides work considerably different. For a boy who has an inclination toward electricity this is a good place for practical experience. The chances for employment are increasingly good, since this department of road service is being steadily expanded every year.

Machinery subdepartment. The machinery subdepartment is under the direct charge of the division master mechanic. His department includes three different kinds of work.

1. *Duties of carmen.* First, the cars must be inspected and repaired. This is the work of carmen. When your train stops at division points you hear their hammers tapping on the wheels. After your train leaves they return to the car yards to repair the rolling stock damaged through long use or in wrecks.

2. *Work of roundhouse men and mechanics.* Second, the engines must be housed, inspected, repaired, and otherwise cared for at the end of each run over the division. This work is done by the roundhouse men, who are so called because their activities are in and about a house built for the engines in a semicircular shape around the turntable. Then there are the services of the machinists, blacksmiths, and boilermakers—skilled workmen, whose trades will be considered in a later chapter. The other employees have no special training. They knock the fire out from the grates when the engine comes in, run it into the proper roundhouse stall, wash out the boiler, wipe the engine until it shines, and fire it up again when another trip is to be made. Part of this force is on the night shift, and Sunday work is common. These men, like practically all other railway workers, belong to unions.

3. *Work and advancement of firemen and of engineers.* Third, the engineers and their firemen take charge of the engines and haul the trains to the next division point. Some of the firemen get their positions after working in the roundhouse as wipers, hostlers, and helpers, but most of them on the larger roads are either experienced men from other roads

A RAILROAD ROUNDHOUSE

The table on which the engines are turned is shown here in the center of the semicircle. Each section of the building is termed a "stall." This roundhouse will house about twenty locomotives

or inexperienced men who seem to have the proper qualifications to make good firemen. These latter run for several trips without pay, as "students," and then are regularly assigned. It should be understood that for many railroad positions, including that of fireman, an applicant must be twenty-one years of age and able to pass a rigid physical examination, with tests for color recognition, proper vision, hearing, etc.

Firing is heavy work. With the big engines, the long trains, and the speed on some roads, it becomes a back-breaking task to shovel enough coal into the fire box. But the hours for the

trip are short compared with the long rest periods between, though at times the run may call for night work. Since promotion is on the basis of seniority, the engineers oldest in the service get the best runs, driving the splendid through passenger trains being the positions of honor. Further promotions may be to positions such as traveling engineer and somewhat less often to that of master mechanic or foreman.

A SWITCH YARD

Several switching crews are here making up trains. Such work keeps these men regularly at the same town, for taking trains to the next division point is a duty assigned to trainmen, not switchmen

Transportation subdepartment. The transportation subdepartment is in charge of the trainmaster. He manages the equipment and controls the moving of freight and passengers. This necessitates three kinds of work.

1. *Work of yardmen.* First, the trains must be made up. The yardmaster and his switchmen—with the aid of a switch engine, engineer, and fireman sent to them from the mechanical department—rush back and forth upon the various sidetracks, signaling, and shunting cars here and there, until at

last the train is ready for its trip. The yardmen then similarly prepare other trains in accordance with the timetable.

2. *Work of trainmen.* Second, trainmen—a conductor and his brakemen—take charge of the train made up for them by the yardmen and run it to the next division point. The work of switchmen and brakemen, while it is not heavy like the fireman's task, is extremely hazardous. After several years of service there may be promotion to the position of yardmaster or conductor.

3. *Work of telegraphers and towermen.* Third, since all the trains must be run in proper order if wrecks are to be avoided, a numerous band of telegraphers and towermen are stationed along the line. They receive orders from the train-dispatcher, who has his office at the division point and is responsible directly to the trainmaster.

Nature of the work; qualifications demanded. In the machinery and transportation subdepartments—in which young men are likely to be most interested—the demand for labor fluctuates somewhat. In the fall and winter months, when business is heavy, well-qualified men have no difficulty in securing employment; but during the dull season there is a surplus of men on the extra list who do not have steady work.

To secure positions in these departments men are required to pass a mental and a physical examination. These occupations require a quick, active mind,—one that can grasp a situation instantly and use good judgment. All men are required to have a common-school education as a foundation, but the work cannot be learned except by actual experience.

That railroad work is dangerous is pretty generally known. "The occupation of switchman is considered the most hazardous in the transportation department of railroads in the United States," writes the International President of the Switchmen's Union. Some insurance companies refuse to take the risk on brakemen, conductors, firemen, and engineers at all, while those that do insure these men charge a very high rate.

Other work under the operating department. The above comprises the work which is peculiarly of a railroad nature. The other branches of railroad work are not greatly different from those of commercial business in general. The operating department, it may be added, contains also a number of

"KING OF THE TELEGRAPHERS"

This is the chief dispatcher, upon whose orders depend in large measure the avoidance of wrecks and the rapid moving of trains from station to station. He is at all times in touch with local telegraphers along the line

clerical positions, such as those of timekeeper for the various gangs, clerk in the roundhouse foreman's office or with the master mechanic, trainmaster, or division superintendent. These positions need not be discussed here, as clerkships will be considered in connection with a later department.

Unionization of the operating department. The operating department is thoroughly unionized. Wages are not set by individuals making terms with the company, but by collective bargaining. Representatives from the union and the

various railroad companies meet and arrange the wage schedule, hours of work, etc. So important is the transportation service that a widespread strike would be a serious calamity. Hence the government often takes a hand in settling disputes. The operating employees have pressed their claims so well that at the present time few workmen are better paid for their services. This is a point worth considering by the young man who thinks of railroading and has a mechanical bent.

EXERCISES AND PROBLEMS

1. Make a list of occupations which belong to steam railroading but to no other fields of service.

2. As a stenographer or clerk would you rather work in a railroad office or in a store? Give reasons. Are there opportunities for women?

3. Railroad work requires a high degree of coöperation. Show how a large number of workers contribute to the safety of trains and passengers.

4. Why is it that trains are sometimes delayed? Has this anything to do with coöperation or efficient service of workers?

5. Do you know of somebody who is a station agent? What does he say about his work? Can you describe its advantages and disadvantages?

6. Compare the work of the section and repair men with that of similar workers in other occupations.

7. Can you find out how machine work in railroading is different from that in factories or other shops? What has this question to do with such a problem as a strike?

8. Describe the work of the trainmen, or brakemen as they are sometimes called, on a freight train and on a passenger train. Which position offers the greater advantages?

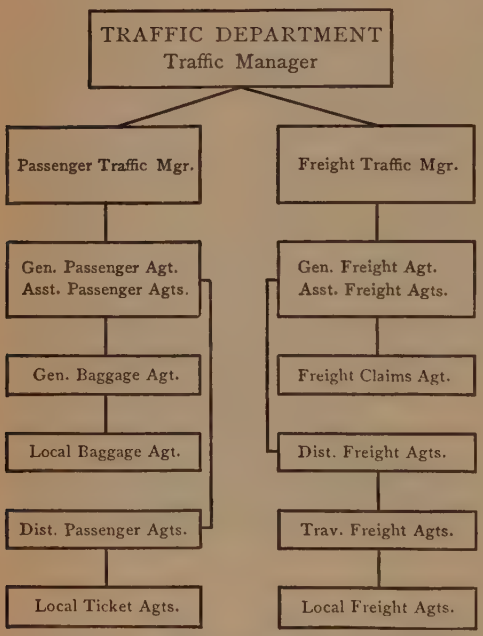
9. Can you find out anything about the railway unions? If so, report your findings to the class.

10. Can you visit a railway yard? If so, report in class what you learn.

11. Demonstrate the work of a locomotive engineer or another worker.

Traffic Department

A railroad has service to sell. It is upon the persons and commodities transported that its money is made. Needless to say, the traffic department, under whose charge this business is conducted, is a very important part of the railroad organization. The chief official, often a vice president of the company, is termed the traffic manager. Each of the various subdivisions which form a traffic department is shown here in its place in a diagram. What two officials are directly responsible to the traffic manager? First, the work of each will be discussed in turn, following which three other activities of the traffic department will be pointed out and discussed.



ORGANIZATION OF TRAFFIC DEPARTMENT

The railroad company has transportation services to sell, and this is the organization which deals with shippers and passengers

Passenger subdepartment. 1. *Duties of the station agent.* The official of the passenger department with whom you are probably most familiar is the local ticket-seller. In small towns he is always found at the station, and in addition to his duties as ticket agent he often has charge of the freight,

express, baggage, and telegraphing as well. But in the larger towns the station agent has several assistants, the man who sells tickets perhaps being a clerk. He may also have his office uptown and carry on his business much like a retail merchant.

2. *Advancement.* Promotion for the local-station agent may be an assignment to a better station or, in fewer instances, to a district passenger agency. The district passenger agent advertises summer resorts and outings over his road, arranges the trips and facilities for conventions and other special meetings, and keeps his superior, the general passenger agent, informed of the traffic conditions in his district and advised of plans for increasing the volume of business done.

To secure all this information, however, often requires much traveling. Traffic must at times be personally solicited. Hence, attached to the office of the district passenger agent and likewise to the offices of the local passenger agents is a corps of traveling passenger agents or solicitors. These men do business in much the same way as any traveling salesmen.

Freight subdepartment. Considerably more important to the company than the transporting of passengers is the hauling of freight. For every passenger riding on the roads in 1920 two tons of freight were shipped. You may have small consideration for the freighter which humbly sidetracks to let your passenger train go by, yet these box cars yield a revenue four times as great as the coaches, the difference in 1920 being $3,000,000,000. The positions in the freight department, as you will notice on the diagram, are similar to those in the passenger department. But on account of this enormous volume of business there are excellent opportunities for men versed in the various kinds of rates, the methods of rate-making, the forms used in traffic-handling, the methods of traffic development, and traffic associations, pools, and other forms of railroad coöperation. A young man thoroughly

trained in these subjects as they apply to railroading is also well prepared to manage the traffic department of commercial and manufacturing concerns.

Advertising. There are a few positions to be had in the advertising departments of railroads. Here, of course, is required a knowledge of the principles underlying advertising and of their practical applications. It is a specialized vocation, with attractive openings for the few persons who are qualified and who adapt themselves to the special characteristics and needs of railway publicity.

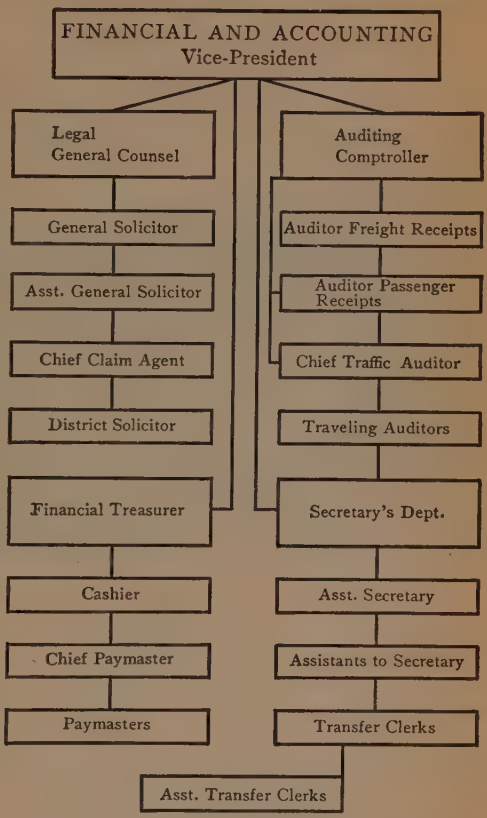
Mail service. The work in the mail-service department, although under the supervision of the general passenger agent, is carried on under conditions determined by the United States government. The work of the government clerks which most nearly approaches railroading—that is, the work of the mail clerks—will be mentioned in connection with the civil service.

Express service. The express business is also not primarily railroad work, but is carried on under contract with various express companies. In the smaller towns the local station agent has charge of the express business, for which he receives a commission in addition to his regular salary from the railroad. But in the larger towns and cities this service is carried on as a separate business, with a manager, assistants, and delivery men. The competition of the United States parcel post has somewhat lessened the opportunities for young men entering the express service.

Financial and Accounting Department

The business secured by the traffic department and handled by the operating department must be systematically managed. This gives rise to a variety of work which is intrusted to the department of accounting and finance. Notice in the diagram on the following page how many divisions this department has.

Auditing division. The ordinary business man counts his money when he receives it. But this simple task becomes an elaborate process when instead of the business man we have a railroad company. All tickets sent out to the different selling-offices are carefully listed, and the local ticket agent's report of sales is checked up with the original account, with the used tickets turned in by conductors after the close of each trip, and with the unsold tickets still left on hand. The freight waybills and the express and mail receipts are checked over on the same plan. Thus accurate record is made of all the money and tickets received.



FINANCIAL AND ACCOUNTING DEPARTMENT

The work done in these departments of a railroad does not differ a great deal from the financial and accounting work of commercial concerns in general

The ordinary commercial man would also count his money as he paid it out. Just as ticket and waybill are the basis upon which receipts are computed, so the voucher is the basis upon which the disbursements are made. No

money is paid for materials or wages unless authorized by means of this voucher, which bears the signature of some responsible official.

The head of the auditing division is called the comptroller. This officer has three leading subordinates: the auditor of

THE GRAND CENTRAL TERMINAL, NEW YORK

In addition to its use as a passenger station, this magnificent building houses the financial, traffic, and auditing departments. An architectural triumph not only in the beauty and convenience of the buildings but also in the fact that while the plans were being executed 800 trains were kept running and 100,000 passengers handled daily. Trains pulled by electric locomotives reach this station from the north, but the tracks are depressed and it is planned to erect gigantic office buildings above them. Under the street in front of this station run three tiers of subways

passenger receipts, the auditor of freight receipts, and the auditor of disbursements. Under them are a number of traveling auditors whose duty it is to check over the books of the local agents along the line. But to do the detailed work at the central offices a corps of clerks is needed, while to handle these vast sums, and to prepare intelligent finan-

cial statements for the chief officials of the road and for the various reports that are published by the state and national governments, numerous trained accountants and statisticians are required.

Financial division. Although a record of receipts and expenditures is kept by the auditing division, the money itself is in charge of the financial division. This is really the banking part of railroad management, the head of which is the treasurer. His subordinates are termed cashiers, and under them are the officials that the railroad men know best, the paymasters.

Legal division. There are many contracts requiring legal skill; and railroads, like other great business enterprises, find certain legal controversies unavoidable. From the diagram find out who is the head of this division. What are his subordinates called?

Secretarial division. A mass of correspondence is carried on between the railroad company and outside organizations and individuals, and also within the company itself. In addition to the correspondence there are also many records to file and preserve. This work is in charge of a secretary, who is assisted by a great many clerks, stenographers, and typists.

Altogether there are very nearly 218,000 clerks (both men and women) employed in railroad work, principally in the two departments last discussed.

Auxiliary Subdepartments

There are yet other enterprises in which a railroad engages and which consequently must receive attention somewhere in its organization. But since these are common to many other kinds of business, we shall here merely touch upon the most important of them.

Purchasing subdepartment. Railroads are learning the worth of expert buying. Each department formerly purchased its own supplies, but this plan has now been largely

superseded by the more economical one of employing a purchasing agent. He has several assistants, the number depending upon the volume of business, and under them he has also the storekeeper. Unlike most merchants the railroad storekeepers do not sell anything, but distribute supplies upon presentation of the proper requisitions.

Subdepartments in charge of insurance, real estate, and pensions. All companies own some real estate, and there is much buying and selling of property, especially in the case of the Western companies, which have received large land grants. Two other lines of activity, sometimes in charge of separate divisions, have to do with insurance and pensions. Naturally, however, the transactions in real estate and the insuring and pensioning of individuals are not general, but are strictly limited, the former to railroad property and the latter to railroad employees.

How to enter Steam Railroading

It is evident that railroading is a broad field and hence offers a wide range of positions. Directing a shovel gang, running a locomotive, checking up waybills, defending a damage suit, all have a place in railroad work. It is very likely that a young man or woman inclined toward railroad service can find in it some position both congenial and worth while.

Railroads, moreover, are highly organized. The nature of their business requires a somewhat complex organization, with workers held closely responsible. And the way to learn how to fill an important position, the railroad companies believe, is to fill a minor one of the same kind or a similar kind. This means that the system of promotion is characteristic of railroads: men "work up," and emphasis is laid upon seniority. It means, too, looking at the matter from an individual standpoint, that whatever the qualifications of a young man, he will probably have to begin in what may appear to him a very humble position.

The way of actual experience. Accordingly, the primary way of becoming fitted for railroad work is through actual experience. But this way is long, and it has caused many a bright young man to become a mere cog in the machine. As a railroad expert writes to us:

> I have said very little about these openings, as I should hate to advise any young man to bury himself in the accounting department of a railroad. Of course there is opportunity there the same as anywhere else; in fact, there is big opportunity for the right kind of man. But it is mighty mechanical; and unless a boy has all kinds of grit and perseverance, he is likely to become an old man and still find himself a clerk.

The apprenticeship system. The second method of securing training is through the apprenticeship system. The young man agrees to work for a certain number of years for less money than he might otherwise earn, and the employer in return provides him special opportunities to learn the trade. Apprenticeship on railroads at the present time is generally limited to the mechanical department, because this work is specialized and lends itself best to such a method of learning.

Courses of instruction. The third method is the school, a place where definite instruction is given. Sometimes this instruction is offered by correspondence, the school having no particular connection with the railroad company. At other times the work is done in company schools, in the various Young Men's Christian Associations, and in certain high schools, as at Fitchburg (Massachusetts) and Altoona (Pennsylvania).

Educational advantages offered by railroad companies. The railroad companies themselves are developing educational work. The Santa Fe Railroad trains men enough to fill all its higher positions by promotion. Almost all railway companies conduct some form of educational activity. The Union Pacific Railroad Company, for instance, has an "educational bureau." Its objects are as follows:

First object. Assisting employees to assume greater responsibilities. The bureau will offer any employee desiring to qualify himself to assume greater responsibilities a course of reading and study along the line which he may indicate.

Second object. Increasing the knowledge and efficiency of employees. It is the purpose of this bureau to provide a means whereby any employee desiring information on any particular question or problem he meets with from day to day can send this question to the bureau to obtain an answer. No limit is set on the number of questions that may be asked, and any employee may ask for information every day, if he so desires.

CONDUCTOR GIVING THE "HIGH-BALL"

This conductor came up from the ranks and, as the number of braids on his left sleeve indicates, has been in the service over a quarter of a century. The high standard required in railroad work is shown by the fact that this train, making a daily 1000-mile run, was on time 355 times out of a possible 365

Third object. Preparing prospective employees for the service. It is the purpose of this bureau to assist in supplying men of good reputation and character to fill vacancies and, where possible, to train these men as far as practicable in the duties of their prospective work before their employment.

Improved conditions in railroad employ. From what has been said it becomes evident that entering the railroad employ and succeeding in it as a life career is a problem now being vigorously attacked from several quarters. Because of the resulting advantages, railroad service will gradually become more attractive to young men of training and per-

severance. As is pointed out by a former official of the Lehigh Valley Railroad, speaking of future developments:

> The time will come when railroad employ for *every* man in the service will not mean drudgery, nor sinecure, nor accidental opportunity, but an enlightened, stimulating, highly efficient service of the highest earning power, least uncertainty from accidental causes, largest freedom for individual initiative, entire self-respect, and thoroughly democratic spirit.

Qualifications. As to the qualities which will bring success in railroad work, perhaps it may be well to consider what former President Howard Elliott, of the New York, New Haven, and Hartford Railroad Company, said recently:

> The only rule to success that I know of is hard work, honesty, sincerity, good character, and good habits. These are platitudes, but they are the principles of success. Whatever you do, do as well as you can, and do a little more than is expected of you, if possible.

ELECTRIC RAILROADING

Growth and importance of electric railways. You may be surprised to learn that electric railways carry almost ten times as many passengers as do steam railways. Though the amount received from each passenger is only a few cents, electric railways earn in this way almost two thirds as much as the income received from passenger traffic on steam cars. While the growth of cities is accompanied by a steady increase in the number of surface, elevated, and subway lines, one of the interesting developments of rural life is the building of interurban railways. In ten and a half years, ending with 1917, the total mileage increase of electric railways was seven thousand miles. But the increase of interurban lines was more rapid than that of city lines. Hence the young person who thinks of railroading as a career should by no means neglect considering interurban lines as well as city car systems.

Positions available. For the accounting, management, clerical, scheduling, mechanical, and supervisory positions, electric railroading furnishes about the same opportunity as steam railroading. Both must have superintendents, bookkeepers, stenographers, filing-clerks, machinists, inspectors, timekeepers, and the rest. The chief positions which are different are those related to electricity, and those of conductor, motorman, guard, announcer, and ticket-taker.

The qualities required. The work of the electrician is very much like that described in Chapter XII. Some work resembles that of the electrician in the building trades, but motors, dynamos, and storage batteries must also be handled.

The conductor must be a man of patience and resourcefulness, able to get on with people, accurate in his financial accounting and records, able to make adjustments in the car, willing and ready to answer questions and direct people, able to take charge and direct the work of the motorman, cool, careful, and resourceful. He must be equal to such emergencies as accidents or misbehavior, and must always be courteous and tactful.

The motorman must be careful and quick in piloting his car through crowds and automobiles, and even-tempered and cool in tight places. He must know enough about electricity to run the car successfully and must also aid in case of any emergency.

The guard opens and closes the door on subway or elevated trains and calls stations. The announcer is a platform man who handles the crowds as they board and leave the cars. The driver of a one-man car must combine almost all the qualities listed above, especially those of the conductor and motorman.

Characteristics of these occupations. After one has reached his maximum wage, electric railroading offers a steady job, the choice of the best runs, and a fair standard of living. In the early part of a motorman's or conductor's experience, however, his day may be broken into uncomfortable parts, and he may have to do night work, as well as to face the

difficulties of rush hours. In many American cities the workers are strongly unionized, and collective bargaining is the rule. In Philadelphia the traction workers own stock in the company and have a representative on the board of directors. Some few American cities run their own lines.

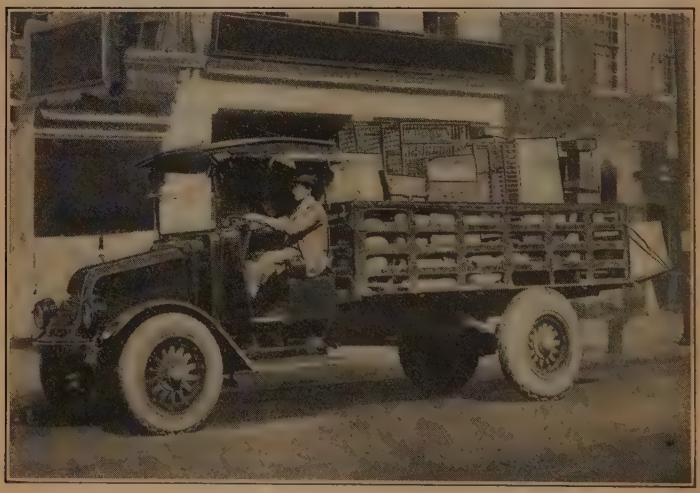
The plan of training is very carefully standardized and efficiently carried out. A "student" is placed in the charge of an older man. The first day or two he merely observes and asks questions. The second day in quiet hours he may be asked to take charge under the supervision of the teacher. He is given something like a wage while learning, and sometimes his teacher is paid an extra compensation. After a few days of carefully supervised work the student may take charge of the job.

Women have had little opportunity to serve on the operating side of street railways in America, though no doubt they could serve well, as they have in many foreign cities. In the clerical side of the street-railway business many women are employed.

MOTOR TRANSPORTATION

Its growing importance. Motor transportation is growing so fast that no one knows to what it will lead. In a recent Chicago street-car strike the company and the men both hurried to a settlement because motor transportation promised to supplant entirely the street-car facilities. In the hauling of rubber products from Akron to Cleveland, motor lines have proved their economy and efficiency, and are a regular feature of commercial transportation. Motor-bus lines are operated all over the country, and in some cases travel is almost as fast as on the railroads. So rapidly has the industry grown that a whole new science of road-building has arisen, and highway engineers are forced to plan for a road which will stand the pounding of the wheels of trucks loaded higher than a freight car.

Positions available. The management of motor transportation requires the same kind of organization as the railroad and electric transportation. Only the actual operation differs, except of course that repairs and adjustments are now related to the auto mechanic's work rather than to that of the railway mechanic or the electrician. And, strange to say, on



THE TRUCK DRIVER

Courtesy of the National Automobile Chamber of Commerce

the operating side there is but one position available; namely, that of the driver, or chauffeur. There is the chauffeur for private passenger cars, the truck-driver for commercial transportation, and the auto-bus driver for large passenger vehicles. The work of all these men is so well known that brief descriptions will suffice. The chauffeur's work is often combined with other work, particularly where he serves a family which requires perhaps gardening and care of grounds along with a small amount of driving. The truck-driver must travel in all sorts of weather, sometimes carrying heavy loads, and frequently assisting in the loading and unloading.

He must be careful and responsible, and able to pull his machine through any difficulty which may arise. The bus-driver's work is very much like that of the driver of the one-man electric car described above; that is, he must combine the work of driving with the collecting of fares, directing people, and keeping accounts.

THE TEAMSTER

Frederick J. Allen, in his pamphlet "Studies of Occupations in Agriculture, Forestry, and Animal Industry," describes the work of the teamster as follows:

> The chief requirements for this occupation are fair health, strength to meet exposure and to do hard work, a decided liking for animals and an understanding of their right use, self-control, good judgment, and power to bear responsibility.

INLAND AND OCEAN NAVIGATION

You may live near the Great Lakes, on some navigable river, or in some great seaport. How does water navigation appeal to you? What opportunities are there in it for a life career? Upon the inland waterways of the United States the total traffic is enough for a good-sized ocean. Most of this is upon the Great Lakes and the St. Lawrence, but the Mississippi, the Ohio, and the Hudson also have a notable volume of traffic. In addition, our immense foreign trade means important ocean traffic. The greater part of this was under the control of foreign shipping companies until the war. Now, however, the American flag flies over a large fleet of ocean-going vessels. Hundreds of thousands of workers are busy serving us in shipping by water. There is a wonderful variety of positions, from those of the sailor, deck hand, and stoker to those of the pilot, harbor master, naval architect, and marine engineer. No matter what inventions and improvements are made, water transportation retains its importance.

The positions common to other occupations. The general administrative work in shipping by water resembles very much the organization of the railroad and the electric

STUDYING NAUTICAL OCCUPATIONS

Courtesy of Massachusetts Nautical School

transportation lines. So also does the loading and unloading, except that much of this for water transportation is by hoisting. On the big liners and on many other boats there are workers similar to those in a hotel, as described in Chapter XVIII. There are also enginemen, stokers, and

coal-handlers, whose work is similar to that described under stationary engineering in Chapter XI.

Distinctive occupations. Shipping by water calls for many specific kinds of workers who are found only in this line of work. There is, for example, the hard but fascinating life of the sailors, who are required to do everything from mopping floors to climbing to the topmast. There are the ferrymen and deck hands, whose work is like that of the sailors but more simple. In the higher positions there are, beginning at the top, the captain, the first, second, third, and sometimes fourth officers, the purser, radio operator, chief engineer, assistant engineer, steward, and stewardess.

The work in ship construction resembles very closely the work described in Chapters XI and XII, though it deals with a construction having a very special kind of foundation, and difficult problems in curves, steel plates, and cement. For naval architecture solid geometry and spherical trigonometry are important, as well as peculiar engineering ability concerned with stresses, strains, and vibration. Even the common construction workers, as was proved during the World War, have to have a special training to work on ships.

Next there is a whole group of high-class workers who are not concerned directly with any one ship. There are officers in the hydrographic service and lighthouse service, coast guards, steamboat inspectors, marine-corps officers, naval and naval-reserve officers, executives of the shipping-board, officers in the merchant marine, pilots, harbor masters, and captains of the port.

One learns an occupation on the water largely through experience, though for the higher positions extensive study is necessary. One of the best schools is the nautical school run by the state of Massachusetts, for which a practice ship is set aside. Here is given a two-year course covering mathematics and science as well as all the work of the sailor and the officers.

We shall treat the work of the aviator in Chapter XIX.

EXERCISES AND PROBLEMS

1. Explain how the work of the traffic department is very much like that of commercial occupations, as described in the next chapter.

2. Trace a passenger from the time he purchases his ticket to the time he arrives at his destination, naming all the workers who help him on his journey. Can you diagram the relationships?

3. Trace a piece of freight, such as an automobile, piano, or box of groceries, showing the workers who help it on its journey. Can you diagram the relationships involved?

4. Can you find out something about the railway mail workers or express-service workers, and their service on the trains?

5. Can you tell anything additional about the auditing department? Explain why it is important.

6. Do you know of any legal questions that might arise in connection with railroading? Show how some of these legal questions are handled.

7. Do you know of any schools or other training-systems for railway work? If we could put a few miles of track and a few locomotives in the school basement, do you think railroading would furnish a good kind of manual training?

8. Make a careful observation of the work of conductors and motormen. Perhaps you can take notes, telling just what each does in the course of a half-hour's ride. What qualities of character do they need?

9. Make a list of the ways in which passengers on electric cars can aid the railway company and its workers to give effective service.

10. Investigate the conditions of work as to hours, wages, lockers, and other conveniences in your electric-railway system, and explain what you find out to the class.

11. Tell something of the way one can begin work in railroading, how he is taught his work, and what are the chances of promotion.

12. What are some of the difficulties of driving a motor truck?

13. Can you interview a teamster in your region, to find out something of the characteristics of his occupation?

14. Will the development of motor trucks and water transportation injure the railroads? (This is a difficult question to answer. See whether you can find out anything definite and accurate about this problem.)

15. Draw a diagram of some of the occupations in water transportation, and show how they correspond to our diagrams on railroading.

16. If you have read "Two Years Before the Mast," see whether you can describe the work of a sailor at that time. How have modern inventions and improved standards made the work of the sailor different? Does "Treasure Island" give a picture of sailor life now?

17. What are some of the advantages and disadvantages of working on shipboard?

18. Trace the course of a passenger or piece of cargo, listing or diagraming the workers who aid in transportation.

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For further references see our general list at the back of the book, especially Allen, Barnard, Bishop and Keller, Giles, McKinney and Simons, and Weaver.

CHAPTER XIV

COMMERCIAL OCCUPATIONS[1]

What commerce is. All occupations have commercial aspects in that all workers are concerned with selling goods or services for money or some other form of "value received." The farmer, teacher, janitor, horseshoer, postman, and carpenter all are in business for themselves in the real sense that they sell their services. Moreover, all institutions and establishments show their commercial side in the records they keep and the money they handle. Churches, women's clubs, lodges, schools, factories, railroads, mines, and shops are examples of such institutions.

The distinctly commercial occupations, however, are directly concerned with the *exchange* of goods (the business of the salesman, retailer, proprietor, commission merchant) or with the facilitating of that exchange (the function of the stenographer, stock-keeper, bookkeeper, banker, advertiser).

In the study of business or commercial occupations the important thing to remember is that just about the same activities are carried on in all the various kinds of establishments. Thus, all the factories and stores have bookkeepers, stenographers, salesmen, stock-keepers, messengers, delivery clerks, and cashiers. It is these activities that you should study now, and later you will be prepared, after you have had a few years of experience, to decide in what kind of business to invest your effort. As a matter of fact, it is easier for a salesman of life insurance to learn to sell automobiles than for an auto mechanic to transfer within the same industry to the selling of automobiles.

[1] We are indebted to Professor F. G. Nichols for suggestions on the arrangement of the parts of this chapter.

How people begin. We have already reminded you of the fact that there are many levels upon which to enter any occupation. If you are to enter on a very high level, you will need an extensive education, which at present, at least, is not within the reach of most students. Even with a good high-school education, therefore, it will probably be necessary for you to begin in one of the juvenile, preliminary, or temporary positions, such as office boy, general clerk, salesperson in a retail store, stock girl, file clerk, mail clerk, bundle-wrapper, switchboard operator, delivery-wagon driver, or messenger. These occupations were the most common in the "Survey of Junior Commercial Occupations" made by the Federal Board for Vocational Education in 1920. Relatively few persons under nineteen years of age were cashiers or stenographers, and very few indeed were bookkeepers.

In such a position as one of the above-named the young worker can keep his eyes open and learn something of the opportunities which are ahead of him and all about him. Further, in the changes of job which may become advisable during the course of the first three or four years, he may learn something about several different kinds of commercial occupations.

Of course, his first duty and best policy is to succeed in whatever job he has, even if this position is temporary and somewhat unsatisfactory. This first success is of supreme importance. It does six things for the young worker: (1) it enables him to discover and test his ability in a business position; (2) it calls his employer's attention to efficient work; (3) it enables him to judge better when he is ready for a promotion or change of job; (4) it teaches him many important skills in business; (5) it helps him in the development of the qualities of character necessary for success; and (6) it acquaints him with business associates.

Some of these lessons may be learned in the miscellaneous after-school, Saturday, and vacation jobs which are open to high-school students. Suppose it is even such a common task

as delivering papers. It will do for you, and in fact has done for many a paper-boy, the six things listed above. You must always be the judge as to when you have carried your experience far enough and are ready for a transfer to another position. On the whole, boys and girls change jobs much too freely, though there are some few conscientious boys and girls who stay in one position year after year without any thought of the experience they might gain by a change.

Let us now turn to some of the different positions available in all business establishments. Our study will relate rather to the permanent positions than to the temporary ones, though you must remember that stepping-stones are required for your journey. We shall later outline some of the possibilities in various kinds of business.

Complexity of modern commerce. If you were to stand in one of the great department stores, or visit a gigantic mail-order house, or inspect the central offices of a large insurance company, you would doubtless be so confused by the complexities spread out before your eyes that you would not know until after careful study what position you would choose to fill. Yet each of these big concerns has a carefully planned organization in which each employee is fitted into some definite place and has certain duties to perform. It might aid you, perhaps, in thinking out what position you wanted, if you knew something of this general organization and arrangement. While each concern has a somewhat different plan developed to meet its needs, there are similarities of organization to be found in all concerns. This general plan which they have adopted may be indicated by the chart on page 237.

Study this chart carefully. How many main divisions has this organization? In what three ways are goods sold? Under what main division of the business does answering letters come? How many kinds of accounts are there? If a Parisian milliner raises the prices of hats and so writes to the firm, to what department should these new quotations be sent? Some

goods are crushed in transit; to what main division is this matter referred? to what particular part of this division? Under which division should you work as a bookkeeper? a salesman? a stenographer? an advertisement writer?

THE KINDS OF WORK

The salesman. 1. *Service rendered.* The purpose of the salesman is to aid in the distribution of goods. It would be impossible to carry on civilization without the men and women who announce and show goods to the customer, aid the retailer in purchasing the right materials, and help the factory to dispose of its product. The output of all the factories must be disposed of to advantage to the producer and the consumer, or the wheels of industry must stop; and the salesman is the connecting link between producer and consumer.

2. *The kinds of salesmen.*[1] *a.* In the retail store you know the "clerk," who greets customers; finds out their needs, likes, and dislikes; and, in a courteous, observing, and tactful way, sets out on the counter the best goods he has to show and makes the sale. In a department store about one half of the total force are engaged in this work, and the larger proportion of them are women. In certain lines, such as men's clothing and shoes, men predominate. The retail salesman must study his goods, know the needs of customers, and be businesslike and tactful in matching the stock of the store with the needs of the customers. The salesperson requires a knowledge of commercial geography and of textiles, leather, or other raw materials out of which the goods are made, and he needs to study the actual processes of selling. He should adopt an ethical attitude toward his work, trying to be of real service to his customers.

b. The salesperson in the wholesale store is likely to receive visits from out-of-town buyers. He has a much more

[1] We are indebted to Miss Annie F. Slattery for material on the salesman.

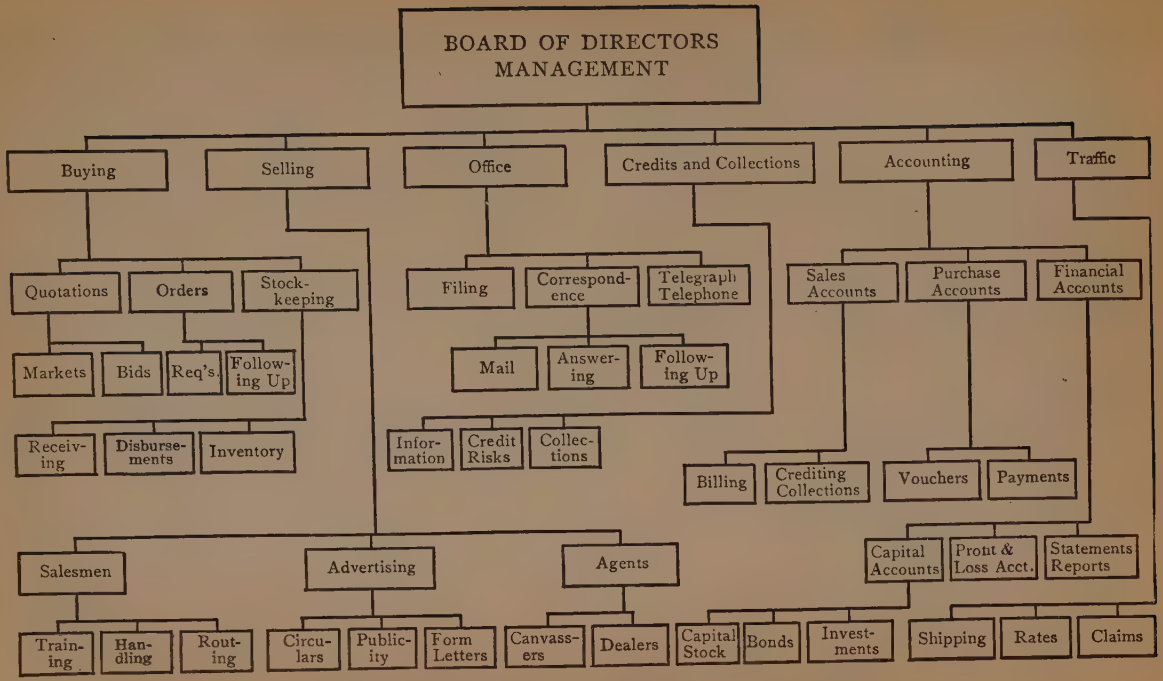
personal and long-continued contact with his customers than has the retail salesman. He must understand the retail problem and the needs of society, and must know how to show the buyer who comes to him all about the product, and even perhaps to make demonstrations to aid in sales and to show the retail store how goods should be sold. In fact, the wholesale stores or factories sometimes instruct retail salespersons. This is particularly true in the automobile business.

c. The traveling salesman must himself go to his customers. In calling on a store he may have to wait until everybody else is served before laying out his sample case and showing what he has to offer. There is a great army of such salesmen, who stop at hotels and whose life, while irregular, is—if they are well adapted to their work and like it—a fascinating one. They usually receive not only a regular salary but a percentage of profits on their sales. Disadvantages and discouragements are many. Their work is being somewhat supplanted by "silent salesmen" (advertisements) and by buyers' trips to the cities.

d. Canvassers are like traveling salesmen, but they usually work for a long time in one city. College students sometimes engage in this work, particularly in the summer time, selling magazines or books, new inventions for household use, or other things which people are not likely to find in stores.

e. The auctioneer is the hurry-up salesman who closes out stocks which have to be disposed of. He must have an agreeable manner and strong voice, and a wide knowledge of goods. There is always a temptation to exaggerate.

f. Insurance salesmen sell protection. The work in life insurance is characterized by keen competition for business, and there are many who try this kind of selling and fail. Insurance salesmen are usually given weekly salaries and percentages. They must make appointments and interview individual "prospects" in order to make their sales. There are salesmen for fire insurance, accident insurance, and all the rest.



THE ORGANIZATION OF A COMMERCIAL CONCERN

g. Foreign-market salesmen are men who must have the greatest possible preparation for their work. They need to know geography, history, politics, national customs, commercial law, and the language of the people with whom they deal. For these reasons natives of foreign countries are often employed as salesmen or agents for American firms.

3. *Advantages of salesmanship.* Hardly any other calling exists where the results are so easily seen. An actual sale to a satisfied buyer is its own proof. Again, the experience one acquires as a salesman is useful when promotion comes, since one appointed as a member of a board of directors needs to know the principles of buying and selling. The commission plan of paying salaries makes the work interesting, since it stimulates one to do his best, though sometimes it tempts men to sell to people who ought not to buy. Salesmanship has constantly improved its ethical standards. It is gradually discovering its service to mankind and its relationship to the other occupations.

4. *Training for salesmanship.* Commercial departments in high schools usually have courses in salesmanship, and opportunity for practical experience is frequently provided. The Prince School of Education for Store Service, at Boston, trains experienced teachers to become teachers of salesmanship in high schools and in stores. Furthermore, the stores themselves, particularly the larger ones, are fast developing plans for instructing their sales forces. The general manager of R. H. Macy and Company states the following experience:

> We began our training about 1913 and believe that through training we have accomplished much. We know that we are doing more transactions by far with the same number of employees. We know that our sales clerks have a better knowledge of merchandise and that they can impart that knowledge to customers better. They can explain why the price of one article is fifty cents more than the price of another when, to the ordinary eye, it seems to be of the same quality. We know that we have fewer complaints and fewer errors, and, having gone over our records, we find that for the year 1921 we

had an increase of 82 per cent in the number of transactions over the year 1913, with an increase of only 19 per cent in the number of our employees. We believe one of the contributing factors toward this record was the knowledge our employees have acquired through training.

Before one is well prepared, however, he must learn on the job. Both stores and schools arrange a plan by which the learners alternate between the job and the class instruction; thus practice and theory are combined, often on the same day. Director W. W. Charters, of the Research Bureau of Retail Training, Carnegie Institute of Technology, describes "training on the job" as follows:

By the term "training on the job" I mean the method by which the salesperson is watched while at work and his mistakes and weaknesses corrected. There is no other method of training so efficient. A boy may go to church and listen to a sermon on honesty, but that method of instruction does not constitute training on the job. His mother watches him by day and by night, at work and at play, and when he performs dishonest acts she shows him in each case what the honest action would be. That is training on the job.

To train salesmen on the job means that talks must be given, courses of study taught, and literature distributed to be read. In addition it means that the young salesman should watch expert salesmen sell, and then talk over the methods used and the reasons which lie at the base of the methods. It means also that the salesman may go back after he has interviewed a prospect and report to his superior upon his selling-methods, so that the superior may show him where and how he could have been more effective and may praise appreciatively the excellent points of the method. Particularly does it mean that the trainer, whether he be the manager or an experienced salesperson, actually watches the novice on the job. When they go together to interview a prospect or stand together to interview a customer, the novice tries to make a sale, while the trainer keeps his hands off the transaction for as long a time as possible, so that he may merely watch how the beginner handles the situation. Then, before the memory of the sale has faded, the trainer gives his training on the job. He analyzes the sale and shows the student where he used a clever method and where he made mistakes. Constructively, he demonstrates how the mistake could be corrected.

The advertiser. Advertising is necessary in connection with any factory or business and requires a staff of skilled workers who can write, talk, draw, and sell. The writing comprises the composing of advertisements and pamphlets, the study of products, and the utilization of the work of the research department. Talking is required in connection with the discussion of policies and the working-out of plans. The art work requires the making of posters, magazine advertisements, drawings, and fancy lettering. Furthermore, the advertising policy which is to be pursued must be "sold" to those who authorize it and pay for it. Finally, the advertiser must be a salesman in potentiality if not in fact, in order that he may understand the problems of the salesperson and thus make his advertising effective. Otherwise he may have to stick to routine tasks.

In advertising, a person may sometimes be tempted to exaggerate. This exaggeration may lead to dissatisfaction, particularly if the work requires the overadvertising of things not worth the selling. Moreover, the art work is sometimes of a rather crude order, though this feature of the work is constantly improving. The work of the advertiser is usually attractive and stimulating, and never monotonous.

Buying division. 1. *Nature of the work.* Before merchandise can be advertised or sold, the store must decide what it has to offer; quotations on these articles must be secured, orders must be placed, and the stock cared for and prepared for sale. All these processes are in charge of the buying division. In department stores, for example, the work of this division is further divided into four subdivisions: namely, the buying organization (buyers, assistant buyers, heads of stock, and office clerks); the receiving-room (in which are the receivers, examiners, bill clerks, and porters, whose work is to receive the goods ordered by the buyers); the marking-room (where goods are priced by the markers); and the stock room (in which the surplus merchandise is stored until called for at the retail counters).

2. *Opportunities.* The outlook for well-qualified buyers is at present good. "But little attention up to this time," writes the editor of a business periodical, "has been paid to the science of buying; this, too, in the face of the fact that there is no department that contributes any more to the success of a business than that concerned with the purchase of material, stock, and supplies. When it is considered that buying requires not only keen, shrewd, business judgment but also a vast amount of technical knowledge compactly arranged, it is evident that the systematization of the department of purchasing is worthy of careful research, study, and treatment." Large rewards are to be given the young men and women who are able to do this work.

The professional shopper, or buying assistant, informs herself in regard to styles and stocks of goods on sale, and assists a customer in the selection and purchase of goods.

EXERCISES AND PROBLEMS

1. What is the difference between transportation and commercial occupations? Are not both concerned with the exchange of goods?

2. Investigate a factory or shop and find out how the business aspect of the establishment is carried on. Describe the office, shelf, desk, or safe where the bookkeeping is handled. Is there any advertising or salesmanship connected with the shop? What proportion of the workers are engaged in commercial activity?

3. Find out, through interviewing a young worker, whether or not he is able to derive any benefits from his job, such as we described on page 233.

4. Interview a worker to find out something about the question of changing jobs. What does this worker say on the question of changing jobs as against staying in the same position?

5. Prepare a debate on this subject: *Resolved*, That it is better for a young person in a commercial occupation to work up in the same position than to transfer from one job to another.

6. Can you interview a person who does the buying for a commercial establishment? If so, find out about his work and report to the class.

7. Do the same as the above for a person engaged in the selling of goods.

8. Do the same for a person engaged in bookkeeping or accounting.

9. Can you interview somebody who is engaged in advertising-work? Find out from him something about the advantages and disadvantages of that work.

10. Describe some of the different kinds of salesmen you know about, and discuss the different characteristics of their jobs.

11. Can you talk with an insurance salesman about the various kinds of insurance? Tell carefully the service and value to society of this work.

12. Give a demonstration of the job of one of these workers.

Office division. There is a vast amount of routine connected with any big business. Thousands of letters, hundreds of telegrams and telephone calls, pour in upon the main house. The salesmen and the buyers require some sort of clearing-house for their operations. This mass of detail must be classified, attended to, and recorded, and it must be done with accuracy and dispatch. Such is the work of the office division. Among the employees in this division are office boys and girls, stenographers, typists, clerks, paymasters, cashiers, assistant office manager, office manager, and often chief officials of the firm.

There has been a great advance in office practice during the last few years. It is only by improved filing-devices, by better business-getting correspondence, and by more complete systematization of routine that big business can run in an orderly way. And the person who aims at office work today should not merely write the old-time "good hand" and be "quick at figures"; he should use a typewriter and an adding-machine and be informed on all the new methods of securing efficiency in office practice.

The stenographer. Although certain forms of shorthand were invented many centuries ago, the occupation of stenographer is a rather recent development, at least so far as its

present extent is concerned. Communication and transportation of all sorts are actively dependent on the stenographer and his work. The invention of the typewriter, about fifty years ago, with the opportunity to use carbon copies, file letters, and keep accurate records, was largely responsible for the present development of the occupation. Over 80 per cent of stenographers are women.

An actual instance of the effect of a slight mistake shows the importance of the stenographer's work. A wrong date in a business letter caused a traffic congestion and tie-up, lasting about three quarters of an hour, on the water front of a big city.

Men have grown so dependent on the work of the stenographer that thousands of business men rarely write a letter by hand, and thus they are able to turn out many times the volume of work which would otherwise be possible.

1. *The work and importance of the stenographer.* The stenographer may have a great deal of work to do besides merely taking dictation in shorthand and transcribing with the typewriter. General office work is usually her task as well, and sometimes the receiving of goods and the keeping of accounts. She must maintain a file of letters and know where copies of important documents may be found. She frequently works in an outer office and receives visitors and arranges interviews. Where several secretaries or stenographers are in the same office, the head stenographer must have knowledge enough of office practice to supervise the work of others.

The "public stenographer" maintains an office of her own in a hotel or an office building, and is available for commercial work when required. She, like all other office stenographers, may have mimeographing to do.

The reporter and court stenographer are required to take fast dictation in public meetings or courts. The court stenographer must be expert enough to secure a copy of testimony with such efficiency and accuracy that it may be relied upon in the settlement of cases.

In certain cases stenography may become a stepping-stone to the management of an office, and frequently to the work of a secretary. Unless there is a direct opportunity to learn the duties of the manager or other executive whom the stenographer serves, it is hardly likely that his work will lead to an advanced position in a managerial or executive capacity.

2. *Preparation.* One may begin his training for stenography in the second or third year of the high school. By that time the pupil will have reached the necessary maturity. In order to be a stenographer, one must have a knowledge of business organization and a great deal of practice in writing, spelling, and punctuation. An adequate comprehension of the subject matter is also essential. It is for this reason that the short course in a business college is not advisable except perhaps for older persons already broadly educated, as graduates of colleges or high schools. A greater and greater number of women who are college graduates are preparing, either during their college course or directly afterward, for stenography. The work of the stenographer is often closely related to secretarial service, and this is the reason why the broader education is necessary.

3. *Qualities required.* Use the Vocational Guidance Score Card in Chapter XX as a measuring-rod for yourself if you are considering stenography. Shall you be able to develop the tact necessary to interrupt whatever work you are doing and be willing to serve on call for the taking of a letter or the doing of an important errand? Are you able to muster up enough patience, perseverance, and good nature to keep at a hard task when this task is not of your own choosing but somebody else's? Are you able to keep your poise and good nature even when you are so unfortunate as to work for people who are cross, impatient, nervous, or selfish, sometimes treating you as if you were nothing but an errand girl or servant? There are, unfortunately, such persons who dictate letters, and one cannot always choose his employer.

Can you develop a memory for the details of your work, initiative and resourcefulness in taking hold and doing things when they need to be done, and an orderliness and neatness which will change confusion into system?

Private secretary. The work of the secretary is similar to that of the stenographer, except that she must be all the stenographer needs to be and more. Many who begin as stenographers advance to secretarial positions. The private secretary must aid a busy employer in planning his time and his work, take complete charge of answering certain letters for him, attend to his schedule of interviews or other appointments, often take charge of his personal accounts, arrange meetings and sometimes social functions for him, open and attend to his mail, lay out and plan the work he is required to do, and otherwise aid in saving his time and energy so that his work may be done with the least friction possible. If he holds office in certain outside organizations,—for example, as treasurer or secretary,—his secretary must usually do his work for him. If he is working under pressure, or occasionally at irregular hours, she must be ready to meet the needs of his schedule. There are many men who serve in secretarial positions who in turn have secretaries, in order to plan the immense volume of work in the best possible way.

The private secretary thus participates in interesting affairs and to a certain extent aids in guiding them. On the other hand, her service is never for herself, but always for someone else.

There are schools and colleges which prepare both for stenography and secretarial work.

Accounting division. Each day there must be a careful listing and checking up of all transactions. Every purchase made passes through a certain routine. Any inaccuracies must be detected, and the account recorded so that it may easily be found if needed. Every sales order, whether turned in by the salespeople or customers, must have the same care-

ful attention and recording. Accounts with persons are to be kept, and financial statements to be made. All this work falls to the accounting division, which may be separate or merely a branch of the office division.

The usual entrance to this division is as bookkeeper. Capable bookkeepers frequently advance to the better-paid positions of cashier, buyer, or head of the credit or cost departments. Twenty-five years ago the bookkeeper could become manager, but this is not common today.

Credit division. If the firm is large or carries many charge accounts, there is need of someone to investigate the standing of customers who ask for credit, to approve or reject charge sales, to estimate the total credit risks carried, and to collect accounts. This is the work of the credit man; and if the volume of business is large, he may have several assistants. The usual start in this department is as collector.

Traffic division. Should the firm use railroad and steamship service a great deal, a series of problems arises regarding the best routes over which to have goods shipped, what savings can be made in rates over different lines, and what are the relative advantages of freight, express, and parcel post. Such problems are in the province of the traffic manager, who may be an independent officer or under the direction of the office division. He takes charge, also, of any damage claims in which the firm may be involved.

Other commercial workers. Commercial work, in common with other kinds of work, is becoming more and more specialized, particularly with the use of machines. Every new machine invented creates a job with a corresponding name, and many workers do nothing all day long but work at such tasks. In a big office some "stenographers" do nothing but typewrite from dictaphone records. Checkers, bill clerks, ledger clerks, pay-roll clerks, route clerks, dispatch clerks, adding-machine operators, addressograph-machine operators, and many others will indicate the specialization already reached.

It is nevertheless true that diversified work is likely to be the lot of the young person entering upon business employments, and usually, also, this ability to do all-round work is the best test of one's efficiency for promotion.

EXERCISES AND PROBLEMS

1. Can you interview somebody who will tell you about the filing of letters and other material? Perhaps there are some vertical files in your school, with a definite system of classifying material. Explain such a system to the class.

2. Interview a stenographer and find out something about this occupation.

3. Show how the work of the stenographer is necessary in almost all lines of modern enterprise.

4. Do you think that the position of stenographer is a good one to help a person learn about many different kinds of occupations? Would the worker have to change positions too frequently? Discuss these questions.

5. Compare the occupation of the stenographer with that of the teacher.

6. Describe the work of a private secretary and show how this is different from that of the secretary of a corporation.

7. What do we mean by an inventory? Show how this is one phase of the accounting work, and find out, if you can, how the workers take the inventory.

8. Do you think that there is a financial advantage in the "cash and carry" system? What are the advantages in the method of charging?

9. What investigation do you think the store person should make before he allows a person to open an account?

10. Find out how the workers mark goods in a department store or other business. Is this interesting work?

11. Would you rather work at some specialized occupation like addressing envelopes all day, or would you rather have the variety of general work? What are the advantages and disadvantages of specialized as against all-round work?

12. Give a demonstration of the tasks of a commercial worker.

THE KINDS OF ESTABLISHMENTS

We have now outlined the various positions in all establishments, and we shall therefore turn to the various kinds of establishments, beginning with the retail store.

The person who surveys the commercial world has spread before him a great variety of business activities. It would require volumes to describe all of these even briefly. But in one book we can treat only briefly the most important of these kinds of business and leave with you a somewhat extensive list of references. On other pages the subject of positions will be discussed, but before you consider which position to choose, think over which business you prefer. Study with care the exercises bearing upon this. When you discover that a certain business appeals strongly to you as a life career, read some of the books treating it.

The retailer. The pioneer merchant was the keeper of the old-fashioned crossroads general store. He kept a little of everything, from the cinnamon bark in the tin carton to the manila rope he uncoiled from the cellar. But when the farmer's wants outran this limited stock, he sent an order to some mail-order house. It is the proud boast of some of these houses that they sell everything, from a needle to a threshing-machine. If the crossroads has become a city, those who still prefer to buy all their goods in one place patronize the department store. But the crossroads store has also split up into stores carrying different lines. And of these the number is legion. There are separate stores for each of the following commodities: hardware, implements, china and glassware, dry goods, clothing, furnishings, boots and shoes, fruit, confectionery, meat and vegetables, grain, flour, and feed, lumber, coal, watches, clocks, jewelry and optical goods, drugs, stationery, and the like. Moreover, the stores just mentioned embrace but one phase of merchandising—retailing. There are likewise numerous openings in wholesaling—not so well known, perhaps, but substantial callings nevertheless.

Printing and publishing. Let us here consider a manufacturing enterprise, as showing how all factories are also commercial establishments and as such have goods to sell. Most of the employees of printing and publishing houses are handworkers and hence come properly under the manufacturing classification. Still there remain almost one hundred thousand others, officials and clerks, whose work is essentially commercial. The publishing industry of any particular firm may be directed toward (1) general, or miscellaneous, book publishing; (2) books sold by subscription methods; (3) educational, or textbook, publishing; (4) newspapers or magazines; (5) job printing.

The outlook for a young man entering this business is very good. The value of the product is steadily increasing, as well as the number of salaried officials and clerks. "If one looks over the field," says a leading American publisher, F. N. Doubleday, in discussing his vocation, "one sees opportunities in abundance. One comes upon a great many men who have ideas, but the men who have the ideas and can work them out are many days' journey apart. In the next decade the sale of books will certainly be vastly increased, and these are the men who will do it."

Real estate. It may seem a simple matter to buy, sell, or lease farm lands, city lots, dwellings, and other buildings. But to carry on such transactions successfully many intricate questions must be solved, which in turn require specialized ability. This the real-estate man attempts to supply. He studies carefully how to evaluate the different kinds of property in which he deals, informs himself concerning contracts, leases, mortgages, taxes, and titles, and learns how to work to advantage with the owner, the prospective purchaser, the banker, the lawyer, the surveyor, and the architect.

In practice the real-estate man devotes himself to one of several possible kinds of work. He may specialize in office or store buildings, and in how to manage them at a profit. In large cities especially, such work claims the attention of

many real-estate men. Instead of office or store buildings he may deal in dwellings—building, buying, or selling them, or serving as a renting agent.

Other operators devote themselves to developing new tracts of land. They may buy a tract near some city, lay it out in blocks and lots, build sidewalks and at times houses as well, and then, by inducing people to move in, start a new suburb whose improved lots sell considerably higher than did the rough tract out of which they were formed. Of course, such an operator must be farsighted and shrewd in estimating which way the city's population is to move, or his proposed new suburb may remain only a dream.

Since people attach great importance to their farms, houses, offices, and other buildings, the man who aids them to handle all such property with increased satisfaction to themselves performs a service well worth while.

Insurance. In the seventeenth century certain merchants who frequented the coffeehouse kept by Lloyd agreed among themselves that if a member should lose his cargo in the foreign trade, his loss would be made good by the group. In this way, each merchant could trade with assurance, because the risk of loss would be borne by many, not by himself alone. This principle upon which insurance is founded—making the individual secure because his risk is shared by many—has been applied to an ever-increasing variety of events. Accordingly we have such different kinds of insurance as fire, marine, tornado, steam-boiler, plate-glass, automobile, rain, lawsuit, theft, unemployment, accident, sickness, and life.

In the home offices of the insurance companies positions are available for actuaries, bookkeepers, file clerks, stenographers; in fact, one may say the beginner will find here a variety of clerical positions. However, insurance companies are particularly interested in young men and women who show promise of ability as salespersons. They train these young people at their home offices, and then assign them to some branch office, where they are responsible to the local

manager. Insurance is by no means easy to sell, but those who show ability in this respect earn good commissions, and may in time become branch managers.

Banking. In buying and selling we require some sort of standard with which to measure the value of different articles. Such a standard is called money. It is minted or printed by the government in vast amounts, and for the convenience of its owners is received from them or paid out to them by the bank to which they intrust it. Strange as it may seem, however, currency is too limited in amount and too inconvenient to serve the needs of business: it must be supplemented by credit. So, as a matter of fact, today for every four dollars in currency that passes from hand to hand in trading, ninety-six dollars in credit is employed. In consequence the bank's function of dealing in currency is much less important than its function of dealing in credit. It offers a business man its well-known credit in exchange for his less-known credit, and charges him interest for the accommodation. Such is the work of the commercial bank, the most numerous of all banking institutions.

In small towns the banker also advises with customers concerning wills, mortgages, savings, and investments. In cities, however, specialization takes place, resulting in the development of trust companies, savings banks, and bond and brokerage houses. As a consequence, there is a variety of work available in financial institutions, the duties of the small-town cashier, for example, being quite different from those of the city bond salesman.

The departments of a bank are as follows: (1) *Receiving.* The receiving teller accepts deposits from customers, and after checking up the amounts turns them over to the next department, which records them. (2) *Bookkeeping.* The bookkeeper makes careful record of all transactions, since fraud and dishonesty must be guarded against and every account be kept in an accurate and systematic manner. (3) *Loans and discounts.* The bank makes its profits by lending its

funds at interest, but, needless to say, its officers must exercise care concerning the person who would borrow or whose notes are offered them for purchase. (4) *Paying*. The paying teller examines the commercial paper presented him, and if satisfied as to its genuineness, he passes out the bank's funds in payment. Other departments have charge of collecting, correspondence, exchange, and advertising. The average young man may think that these financial companies are somewhat conservative and that the advancement is rather slow. In general, banking is a substantial business with good prospects for the future.

GENERAL SUGGESTIONS FOR CHOOSING YOUR PARTICULAR BUSINESS

Selection according to qualifications, desires, and capital. While choosing your particular business the following suggestions may prove of value to you: (1) Choose a line of business for which there is a particular need in your locality. (2) You may select that business in which your natural ability and qualifications make the possibility of success greatest. If your manners are good and your temper is genial, such a position as salesman in a retail store might be secured rather than work on the adding-machine in a bank. (3) You may enter work which, to you at least, is interesting and attractive, as the hardware business (if you like to handle tools). (4) If you desire to go into business for yourself, you can choose from the large number of available business enterprises the one for which your capital is sufficient.

Consideration of possibilities of success and failure. Before engaging in business for yourself, however, give careful thought to the probabilities of your succeeding or failing in it. "Friction, and with it some loss of power or energy, is inseparable from the conduct of all business, as indeed of all other forms of human endeavor," says Bradstreet's Mercan-

tile Agency, "and it is no surprise to find that in a country such as the United States, where many thousand new enterprises are added each year to the business community, there should be thousands of failures. This business community, totaling in the year 1914 some 1,749,000, naturally includes many poorly provided, in different ways, to embark upon business life." The number of failures among commercial concerns in 1914 is given as 16,769. Bradstreet's draws up the following table, in which the causes of failure should have your closest attention:

WHY MEN FAIL IN BUSINESS

CAUSE OF FAILURE	NUMBER	CAUSE OF FAILURE	NUMBER
Lack of capital	4928	Unwise credits	411
Incompetence	4705	Neglect	371
Specific conditions	2753	Failure of others	304
Fraud	1593	Extravagance	148
Inexperience	941	Speculation	121
Competition	494	Total	16,769

Imagine yourself ready to begin the management of a business. Run carefully down this list, point by point, with your own prospective business in mind, and ask yourself such definite questions as these: Do I know enough to run this business? Have I enough money to make it prosper? Have I sufficient interest in it and sufficient push to escape the dangers of neglect and competition? In short, have I all the necessary qualifications to make a success of this business even under adverse circumstances? After a fair and candid consideration of these questions you will be in a better position to decide whether to start in business for yourself or to work, at least for a while, for some firm already established. Read over again, on pages 101–103, our advice to any mechanic who is considering the advisability of setting up his own shop or business.

Consideration of the effect of modern combination and competition. The general tendency is toward combination; that is, the control of a greater share of the market by fewer but larger concerns. Unless you have a unique specialty or some other particular advantage, or unless you wish to remain in a small town, the chances are that the competition of the larger establishments will be a serious disadvantage to you. Yet, in spite of large department stores and the competition of chain stores, the little neighborhood stores still flourish, even in the big cities.

Perhaps you are like most young men who survey the commercial field: they find themselves unable to own one of these immense stores or banks, and so plan to enter its service as employees. And while deciding which particular business to enter they also think over the equally practical question Which position do I prefer to hold?

SUGGESTIONS FOR PREPARATION

No matter what business you choose or which commercial position you enter, there are practical ways by which you can make the most of yourself.

Self-preparation. Unless necessary in your case, is it not a mistake to begin as an office or stock boy and serve two or three years at a low salary? If you can attend high school, will not your time spent in study be worth much more to you in laying the broader foundation which business men in this age need? If possible, go to college and study general economics, sociology, and political science. Take the special courses in commercial law, marketing, management, accounting, advertising, and business administration—courses which colleges in increasing numbers are offering in order to meet the demand for trained men. You may, although well trained, have to begin at the bottom; but your advancement will be rapid, and in the end you will outdistance the poorly prepared youth who began years before you did.

EXERCISES AND PROBLEMS

1. Make a list of the different kinds of business in your neighborhood. Bring this list to class to compare with those of other pupils.

2. A Cambridge newspaper says, "Dozens of one-story stores are going up in Cambridge, but whether it means prosperity or just putting three grocers where one existed before—and ditto other lines—is getting to be an open question about town." What do you think about this question of the multiplicity of small stores?

3. Can you interview a retail merchant to find out about his work?

4. Can you interview a wholesale merchant, or one who works in a wholesale house, to find out the difference between opportunities offered in wholesaling and retailing?

5. Which would you rather work in, a small retail store or a wholesale establishment?

6. Do banks have anything to buy and sell? How is their work different from that of the retail store?

7. If you were to be a retail dealer, would you rather sell groceries, meat, books, hardware, furniture, lumber, flowers, drugs, ice cream, or some other commodity? What are your reasons?

8. Give a demonstration of one of the activities of a commercial worker.

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CHAPTER XV

CIVIL SERVICE

Uncle Sam as an employer. The United States is one of the biggest employers in the world. Almost all kinds of workers are employed by the government: lawyers, teachers, engineers, clerks, stenographers, farmers, butchers, bakers, sailors, barbers. In order to make the work of the various departments more effective the civil-service law was passed in January, 1883. Its general object was "to regulate and improve the Civil Service of the United States." Its means for accomplishing this were three in number: first, competent employees for the government were to be secured by examination and appointment; second, removals could not be made for political reasons; third, advancement, like appointment and continuance in office, was removed from political domination by being made dependent on fitness alone.

Such a plan for securing government employees was considered revolutionary, and was for many years looked upon with suspicion. But as the system has continued to work successfully, it has grown steadily in favor. In January, 1922, there were 568,390 persons employed in the United States civil service; and of these, 347,855 held positions subject to competitive examination. This whole system is administered by a staff of fewer than 400 persons.

Of these civil-service workers 44 per cent serve the post office. Not more than 13 per cent of the whole half-million are employed in the city of Washington.

On Armistice Day there were 917,740 employees of the Federal service, which number, of course, did not include soldiers, sailors, and shipbuilders, or the large groups not yet included under civil-service rules.

State positions. Though the Federal government is usually thought of when civil service is mentioned, the state governments are also offering more and more opportunities under conditions similar to those of the United States. In New York State, for example, there are over 17,000 positions under the civil service. Among these may be mentioned the positions of accountant, bookkeeper, court attendant, clerk, copyist, engineer, examiner, fireman, game-protector, prison guard, inspector, stenographer, storekeeper, and superintendent. The state of Illinois in 1921 examined 11,664 applicants, of whom 6629 passed and 4156 were appointed. Every state has a long list of positions from which to choose.

Municipal positions. A similar movement for civil-service reform is found in cities. As an illustration of what opportunities municipalities have to offer, the New York Municipal Civil Service Commission conducts examinations for positions in laboratories, hospitals, and asylums, for clerical service, engineering, inspection, legal work, attendance service, police, prison, and fire departments, medicine, street-cleaning, and ferry service.

Desirability of the different positions. If you do not know whether or not the civil service offers a position which suits you, or which of several positions is the most desirable, write to the United States Civil Service Commission at Washington for the general-information bulletin, to your state Civil Service Commission at the capitol for their "Manual of Examinations," and to the Civil Service Commission in your city for a copy of their manual. If you look these through carefully, you will discover in detail the scope of civil-service work. Indeed, it would seem that among so many different positions it should not be difficult to select one worthy of your serious consideration.

Securing a position. If you look through the manuals and select a position which you would like, the question arises, How can I secure it? There is no need to hunt around for some powerful politicians to help you. In this case they are

powerless. The proper way to go about securing a position may be illustrated by taking a concrete case, as follows:

1. *Application.* You are a stenographer and typist, let us say, and you wish to enter the Federal service. You note in the bulletin that applicants for a position similar to your present one are to be examined in a neighboring city on a certain date. Possibly you may have gained this information from a printed notice in the post office, since notices of vacancies and examinations in the civil service are always posted in public buildings. At any rate, you write to the Civil Service Commission at Washington, requesting an application blank. When this blank is received, fill it out with care. Be sure it is complete and just right, in order that you may not be so delayed in correcting it that you will be obliged to wait for a later examination. A card will then be sent you, granting permission to take the examination at the place and date specified.

2. *Preparation.* Meanwhile you should be busily preparing to pass this examination successfully. You turn to the bulletins giving sample examination questions, and by consulting the pages referred to, you note that the first subject required of applicants is stenography dictation. You find there a discussion of what this examination is like and a dictation similar to that which later you will be called upon to take. You note that the second requirement is correctness in copying and spacing on the typewriter; the third, making a good copy from a rough draft; the fourth, making a good copy from a plain copy; the fifth, a certain rate of speed in doing this typewriting; the sixth, proficiency in other subjects. In turning to the section to which reference is made, you see that you will be examined also in spelling, arithmetic, penmanship, geography, and the civil government of the United States. In making preparation for this examination you may be aided somewhat by knowing how the papers are marked. In the bulletins you will find sections which explain how this is done. With these points of information as a

guide, make your preparation. On the date set for the examination appear and do your best.

Chances for appointment. 1. *A high examination mark.* If your papers when graded average less than 70 per cent, your application is rejected and reëxamination is your only hope. But securing a grade of 70 per cent or over places you on what is known as the eligible list, and when a vacancy for a stenographer and typist occurs, the three names highest on this list are submitted to the appointing officer. He selects the person in his estimation best fitted, and the other two names are returned to the register to await the next appointment. The main thing, therefore, is a high examination mark. Education, health, special training, and experience are also taken into account.

2. *The number of applicants from your state.* There are additional factors which may increase your chance of appointment. One is whether or not there are many from your own state seeking positions. Each state has a certain share of appointments apportioned to it. Persons from extreme Southern or Western states have better chances, for often these states, being so far from Washington that young people do not seek work at that distance, do not furnish enough eligibles to secure their share of appointments. On the other hand, if you live in Maryland or Delaware and want a position in Washington, your chances are not so good.

3. *Willingness to work in distant sections.* Another factor affecting your chance of appointment is whether you are willing to work in distant sections. A stenographer and typist who would accept an appointment in Washington, on the Isthmus of Panama, or in the Philippines would be more likely to be placed than one who would go only to Washington.

4. *Qualifying also for state and municipal positions.* Another thing you can do, in case you desire an appointment at the very earliest possible time, is to take similar examinations for state and municipal civil service. Then whichever position is first tendered can be accepted.

5. *Qualifying for more than one kind of position.* Still another plan is to qualify for more than one position. If you pass the stenography and typewriting examination, you thus become eligible for an appointment only as stenographer or as typist. But perhaps you are equally well prepared for two different positions. You may, then, take a second examination for field service, and thus widen your chances of appointment. Or you may be undecided as to which position to select for preparation in the examinations. In this case the results shown by the commissioners in their manual will be helpful in pointing out in which positions prospects are best.

WHAT CIVIL-SERVICE WORK IS LIKE

Once having secured a Federal position, you begin work for Uncle Sam, who, you will find, aims to be a good employer. He does not always succeed in this, of course, or everybody would be seeking civil-service positions. Let us consider a few of the pros and cons of government work.

Stability of employment. Government work goes on summer and winter; there are no shutdowns for repairs, no holiday rushes. Only in a few special cases, as the decennial census-taking, are fluctuations to be found. Nor are the civil-service employees discharged without cause, at the whim of some foreman or factory-owner. Hence we conclude that this work is regular. There is usually provided a dignified and easy way to take up and adjust complaints.

Hours of work and absences. The day's work is relatively short, too, only seven hours being required. Employees may be called upon to perform extra services in times of special need, though this is seldom required of them. Thirty days' leave of absence per year with pay is usually granted. This vacation time may be taken a day or two at a time or consecutively; and, in case of sickness, leave with pay may be extended thirty days more. These three things are important factors in choosing a position.

Advancement. Government work is on a carefully graded advancement basis, and higher positions are usually filled from the ranks by promotion. But many clerks settle down to routine work and soon seem unable to resist the pull of the dead level.

Young men and women of initiative do not need to leave the civil service to seek a career elsewhere. To truly ambitious young men, however, there is no need of fossilizing in Washington. Government activity in this era of the new nationalism and the efficiency movement is widening its scope and improving its methods of work. In several lines there are good opportunities, among which we shall treat briefly the following:

Experts in administrative methods. The work done by the production expert, or the efficiency engineer, needs to be done in government circles as well. President Taft instituted many reforms by means of his Economy and Efficiency Commission. If standards set by this commission are followed up as they should be, clerks who study better methods of getting results will be welcomed and promoted.

Employees in business, railroading, and finance. The last few years have witnessed a great deal of activity in trust regulation and railroad and financial investigation. Men trained in business methods, corporation accounting, banking, and stocks are finding good openings. And they will continue to find such openings, for this work is steadily increasing.

Engineering and technical positions. As an illustration of positions which the Civil Service Commission at times has at its disposal, we may note this announcement:

JUNIOR AËRONAUTICAL ENGINEER

The United States Civil Service announces a competitive examination for junior aëronautical engineer, etc., describing the date, place, vacancy, salaries, etc. Such an examination is open to both men and women, but appointing officers have the legal right to state

which sex they wish in filling the position. The duties of the appointee are described as "to assist in the conduct of experimental and research tests, perform calculations, design apparatus, compile reports, or otherwise assist in the work of a research laboratory devoted to the study of aëronautic problems and other related work." The rating is as follows:

Subjects	Weights
1. General physics	20
2. Mathematics through calculus	25
3. Practical questions on aëronautical engineering	30
4. Education, training, and experience	25
Total	100

Seven hours are allowed for the examination, and the slide rule may be used.

The leaflet then describes the preliminary requirement, which is graduation in engineering, or a substitute of practical engineering experience for the last half of such a course.

There are also positions for engineers in the radio service, geographical survey, coast and geodetic survey, as well as all other forms of engineering. The Department of Agriculture offers many opportunities for young college graduates well trained in science.

In the consular service. The consular service possesses an ideal promotion system and has many other interesting features, but our diplomatic and consular service is still outside the civil service. To the young man who wishes to advance, a consul's position is surely desirable, and the time will come, it is hoped, when only trained men, basing their appointments on merit, will hold these places.

In the field of statistics. The government is collecting a vast amount of data regarding our national wealth, the movement of immigration, the relations between labor and capital, etc. These data must be analyzed, classified, and appropriately presented. This is the work of the statistician, who needs a thorough grounding in statistics, mathematics, and the broader aspects of his work as presented in economics and sociology. Such a person should preferably be a college

or technical-school graduate who during his course has specialized in these subjects and later has conducted some field investigations.

These are merely a few of the many positions now available, a number which will constantly increase. The Federal government and the various states and municipalities are constantly increasing those activities which serve their citizens. The demand for efficiency voiced by these citizens can be satisfied only by trained men and women, and civil service is the way to secure them.

EXERCISES AND PROBLEMS

1. Are there any civil-service workers in your city? Do they work for the city, the state, or the Federal government? Find out how they obtained their positions.

2. What method is used to make a person secure in his position? Do you think this advantage is a strong point for civil-service work? How is it in other occupations?

3. Can you talk with the letter-carrier, asking him about the examinations he had to take and about the characteristics of his job?

4. Do you know anything about the question of civil service during the war? When prices went up did salaries remain the same? What can you say about salary conditions in government service?

5. Give a demonstration of some phase of civil-service work, or recount an interview you had with one of the employees engaged in this work.

REFERENCES

Mayers, Lewis. The Federal Service. D. Appleton and Company, 1922.

Bulletins and circulars from civil-service departments of local, state, and Federal governments.

For further references see our general list at the back of the book, especially Adams (E. K.), Allen, Barnard, Filene, Fowler, Giles, McKinney and Simons, Rollins, Saalfield Publishing Company, and Weaver.

CHAPTER XVI

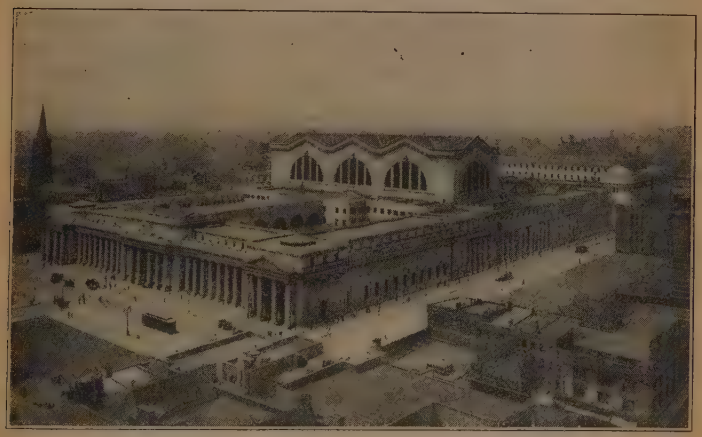
THE ENGINEERING PROFESSIONS

Engineering achievements. Before the manufacturing can begin, the mechanical engineer must first plan the factory and design and install the special machinery and equipment necessary for the manufacture of the desired product. If electricity should be needed to any considerable extent in the operation of the factory, the electrical engineer also would contribute his valuable assistance. Or should the processes of manufacture involve chemical reactions, as in making paints, petroleum products, explosives, plasters, casein products, substances from cellulose, nitrates from the air, new products from denatured alcohol, glue, ink, or rubber, then the help of the industrial chemist would be required.

In the smelter we should need, in addition to some of these engineers just mentioned, the services of the metallurgical engineer to adapt and to direct the best method of extracting the mineral from the ore and of giving it the qualities desired in the market. And again, before the metallurgical engineer could extract the mineral from the ore, the mining engineer must already have made his contribution: he must have discovered the valuable mineral lands, planned a way to mine the ore, directed the mining, and finally rendered the ore fit to be further worked upon in the smelter.

Next, let us consider our water supply, the disposal of the city's sewage, the laying-out of streets, electric lines, parks, subways, elevated roads, and other municipal necessities and conveniences; there is at once suggested to us the vital contribution made by the city engineer. In our thought let us take a trip on the nearest railroad, or mail a letter, or send some article of merchandise by express, and straightway we

discover our indebtedness to the Herculean labors of the civil engineer. Do you realize that every ten miles of railway of the two hundred and fifty thousand miles in the United States has marked some engineering achievement—some tunnel or bridge, revetment or cut, built under almost inconceivable conditions and often at a cost of several millions of dollars? In fact, there seems to be no obstacle or combination of



THE PENNSYLVANIA STATION, NEW YORK CITY

In itself a masterpiece, yet remarkable chiefly because of the tunnels which connect it with New Jersey under the Hudson, and with Long Island under the East River

obstacles too great or too complicated to be overcome by that little group of silent, earnest thinkers and planners who build our railways.

While our railroad and other land traffic requires mighty bridges (like the cantilevers over the St. Lawrence, in our country, and over the Firth of Forth, in Scotland) and extensive tunnels (like those under the Hudson River at New York City, or the Mont Cenis in the Alps, or the Simplon, the greatest of them all), our transportation of people, of ideas, and of things across the seas demands leviathan ships, serpentine submarine cables, and short-cut canals almost

surpassing the power of conception. Our engineers have now perfected for us mammoth sea palaces, with all the comforts and luxuries to be found in a modern city, which, laden with thousands of human beings and millions of dollars' worth of merchandise, are driven from continent to continent in five or six days. From small and frail wooden ships propelled with paddle wheels to the gigantic, palatial *Leviathan*—this has been the record achieved in a half-century by the marine engineer!

But some ocean routes at best are too long; so the engineer was appealed to, and, as always, he rendered the desired service. There was dug at a cost of $100,000,000 the ninety-mile ship canal across the Isthmus of Suez, and the route around Africa became unnecessary for vessels sailing east from the Atlantic to the Indian or the Pacific Ocean. This was a wonderful achievement and contributed beyond computation to the world's transportation facilities. The building of the Panama Canal, which is not so long as the Suez, was perhaps ten times as great an undertaking, because of the uneven surface to be traversed and the greater depth and width of the waterway. With honest pride we can point to the fact that in this most difficult engineering task—civil, mechanical, electrical, and (of equal importance) sanitary—America has achieved an unprecedented success.

After we have glanced over other prominent features of the engineering field and have noted the telegraph (transmitting messages by wire or by cable or by wireless); the telephone (long-distance, local, and radio); the great reservoirs (like the Ashokan, to supply New York City, or the Shoshone, for irrigation purposes in Wyoming); the harnessing and distributing of Niagara's seven and a half millions of horse power; the progress in aviation, automobile mechanics, and chemistry; and the work done as a consequence of the World War, we begin to realize the vast extent of our indebtedness to the engineer. He has wrought mightily with the material foundations furnished by nature, and made it

possible for the farmer, the mechanic, and the manufacturer to produce more easily the goods upon which our well-being depends.

General field of work of the engineering professions. Here we shall present a general scheme of the work performed by

A MODERN POWER PLANT

Electricity in a multitude of ways serves industry. Everyone should know something about it, and the specialist will find in it many attractive vocational opportunities

each of the engineers whose vocations we shall treat, indicating only the principal duties of these men and remembering that in actual practice their activities often overlap.

The **civil engineer** makes surveys and maps of land and water; plans, constructs, and maintains roads, railroads, canals, tunnels, bridges, lighthouses, aqueducts, hydraulic works, irrigation systems; and improves rivers and harbors. Besides the foregoing, which are his specialties, he may also, because of his general training in the engineering field, be intrusted with any of the activities outlined below and belonging more particularly to the special engineers under whom we have placed the work.

The **municipal and sanitary engineer** has to do actually or potentially with the designing, construction, and direction of city highways, parks, water-works, sewerage systems, and ventilation of subways and tunnels; he studies and gives expert advice on the milk supply, epidemics, the smoke nuisance, etc.

The **mechanical engineer** deals with the generation and transmission (except electrical) of power from fuel, water, or wind; he invents and designs tools, machines, engines, etc., and the means of their manufacture; he has charge of the design, construction, equipment, and operation of machine shops, manufacturing plants, and power houses.

The **electrical engineer** is concerned with the design, manufacture, installation, and operation of electrical machinery and appliances; with the transmission of messages by means of telephone and telegraph (including cable and wireless); with the generation and transmission of power (including electric traction, electrification of steam railroads, electric-motor drive, automobile electricity, and electric lighting).

The **mining engineer** locates valuable mineral lands; explores and tests the deposits; adapts in each case the proper methods of mining; installs all machinery, appliances, and power; plans and directs the drilling, blasting, breaking, hauling and hoisting, drainage, support of overhead rocks and earth, ventilation, safety, lighting, healthful conditions, the securing of profitable ore-bearing rock, ore-dressing and ore-milling, and the mechanical preparation of the ore.

The **metallurgical engineer** tests and samples ores; selects or adapts in each case the best methods of extracting the metal from the ore; improves smelting machinery; effects greater efficiency and economy in the processes; designs and installs the smelters and equipment; plans and directs the actual extraction of the metals; and regulates the chemical composition of the metals, giving them the distinctive properties desired in the market.

The **industrial chemist** works out and improves the manufacturing processes which depend wholly or partly upon chemical reactions; converts factory by-products into marketable commodities; designs, installs, and operates plants and appliances to carry on chemical reactions on a large scale; and gives expert judgment on manufacturing-propositions, processes, materials, and plans from the combined viewpoint of the chemist and the engineer.

The **architectural engineer**, having a practical understanding of the trades involved in constructing, equipping, and decorating buildings

and of all the materials required, designs large buildings in accordance with their proposed uses and the principles of beauty, economy, stability, and sanitation; drafts working drawings and writes out in detail the specifications of their construction; oversees regularly the building operations as they proceed; and is the deciding authority on any matters of difference between the contractor and the owner.

THE CIVIL ENGINEER

Among the particular advantages afforded by civil engineering may be mentioned a varied and healthy life, work of an interesting character, and the satisfaction that comes to the designer and builder of what will benefit mankind. Its most serious disadvantages are probably the nomadic life frequently required of construction engineers.

The demand for well-trained engineers is always good, while advancement in the profession would probably be rated as slow, but more rapid than in law, medicine, or theology. In their prime, civil engineers of average success could expect an income of from $3000 to $5000 a year, while a limited number of especially successful engineers have received as much as $50,000. Not only is the annual salary attractive, but the life income is worthy of special consideration, as the average career in this profession is forty years.

Natural qualifications and training. Among the natural qualifications required of the civil engineer, we should mention good character, health, analytical ability, executive ability, and common sense. It would help him much if he could add to these a pleasing personality, and the ability to mix well with other men and to present his opinions in clear, vigorous English. Besides a four-year course in a high school, the young man preparing for civil engineering should master the four years of work provided in a good institute of technology, or instead he might spend three years in a college, taking general-culture subjects (including pure mathematics and sciences), and then follow this with at least two years in a first-class technical school.

THE SANITARY ENGINEER

Nature of the profession. Within the last quarter of a century a new profession has come to the fore—sanitary engineering. From an early application to plumbers and expert drain-layers, the term has grown in importance as the works have grown in magnitude, until it now includes the operations of civil engineers engaged in providing public water supplies, sewerage systems, garbage-disposal plants, and methods of cleaning streets and draining swamps, as well as the activities of those engineers whose interests are chiefly indoors and who are engaged in providing systems of plumbing and ventilation for buildings.

Training required. The problems of the sanitary engineer are so vast and so varied, and bring him into contact with so many branches of science and with so many classes of people, that an exceptionally broad education is demanded. Not only must he be versed in mathematics and mechanics, but he must also have a working knowledge of parts of chemistry, meteorology, geology, biology, bacteriology, microscopy, hygiene, preventive medicine, and vital statistics. Unlike other branches of engineering, sanitation is concerned not alone with iron and stone and other inert building materials but with organic matter and living beings. The purification of water and sewage is due largely to biological action, and a knowledge of bacterial processes is scarcely less important to the sanitary engineer than that of the laws governing the flow of water in pipes and the strength of materials.

Demand for sanitary engineers and associates. Sanitary science is becoming so important that there is room not only for the constructing engineer but also for the sanitary specialist and for men whose duty it is to operate the works after they are built, to take charge of the water-filters and the sewage-treatment plants, to manage the garbage works, and to superintend the cleaning of streets and buildings.

The need of capable managers of sanitary plants will soon be a pressing one, and our technical schools must be prepared to furnish men for this service. It is believed that young men who study sanitary engineering with thoroughness will find that it affords them opportunities for useful service and a comfortable livelihood.

THE MECHANICAL ENGINEER

Professor Edward F. Miller, of the Massachusetts Institute of Technology, writes concerning mechanical engineering as follows:

Demand and remuneration. The Institute has for about ten years had a faculty committee whose duty it was to see that the graduates were properly placed. The demand for graduates has increased so that at the present time nearly all of the graduates in mechanical engineering are placed before their graduation. During the present year every man had at least three openings, and some as many as seven. The average would be somewhere around five.

Mechanical engineering is probably one of the broadest of the engineering subjects, civil and electrical being minor details and specialties of mechanical engineering. This may be one reason why mechanical engineers fit into so many positions. The engineering professions are not as well paid as are certain other lines of work. In general, the men graduating start in at a salary of from $65 to $75 a month, which increases so that at the end of three years the average salary of the entire class would probably be from fifteen hundred to eighteen hundred, some men, of course, getting salaries of five to six thousand. There have been statistics compiled by certain of the classes as to the rate of increase of salary of certain classes, and the average salary at the end of ten years has, according to my recollection, been something over five thousand. This average was no doubt raised by certain men in the class who received rather unusually high salaries.

Natural qualifications and training. As to the qualifications, a man should have, of course, a liking for mechanical work, and should especially enjoy both mathematics and physics. A man who has difficulty with mathematics or geometry is not likely to succeed in mechanical engineering. As to the preparation required, nearly all the high schools give a man a sufficient preliminary preparation. At

present a great many men are entering the Institute of Technology after having studied one or two years, or in some cases after having taken a degree, at some college. These men usually enter in the third year. By this means the men get the advantage of college life and a good broad training, and are better able to take hold of the special work than some of the younger men who have not had the broadening influence and training of the college.

THE ELECTRICAL ENGINEER

The work of the electrical engineer is well known, and he requires qualities of character and preparation similar in general to the others already described. His work is well outlined in Chapter I of "Principles of Electrical Engineering," by William H. Timbie and Vannevar Bush of the Massachusetts Institute of Technology. This textbook, by the way, gives a good idea of the mathematics and physics involved in the preparation of the electrical engineer. Let us quote the summary of Chapter I, describing the electrical engineer:

The modern tendency is toward greater and more efficient utilization of natural sources of power. This tendency is taking the direction of larger and larger central electric-power stations, the application of electric power to more diverse uses, and greater refinement of electric appliances. The field of the electrical engineer is thus gaining in extent and diversity.

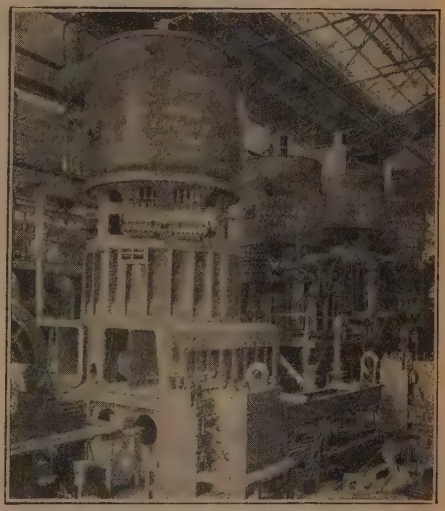
Three types of electrical engineers are needed in this development: first, engineers to design and manufacture electric apparatus or machinery; second, engineers to put this machinery to use; third, engineers to connect electrical engineering with other fields.

Certain fundamental educational requirements are common to all three types, chief among which are the basic laws of mathematics, physics, and chemistry and the general principles of electrical engineering.

THE MINING ENGINEER

To many men no vocation affords so much fascination and such varied and interesting experiences as that of the mining engineer. Its disadvantages are its long periods of absence

from home and civilization, the gambling tendency which may attract some men engaged in mining promotions, and the liability to personal injuries, which, though considerable, are perhaps no more common here than in other fields of engineering. The mining engineer who becomes an assayer of ores for the Federal government, a state, or a mining company often does not have to contend with these disadvantages.



A PUBLIC-SERVICE POWER HOUSE

This plant supplies light to the city and power to the street-car lines. Frequently one plant, from a central location, supplies power for several smaller cities and towns. Such plants are now to be found in every city of any size

Personal qualifications and training. The young man purposing to enter this profession ought to have good health and a sound constitution; he should be willing to undergo physical exertion and to do without many of the refinements and social pleasures available in cities. On the other hand, he should also be able to enjoy thoroughly the exhilaration of life in the open air and of struggle against the forces of nature. He should be a close observer, a clear thinker, with sound judgment and some originality, capable of planning, and able to handle men. Absolute integrity of character is essential.

In addition to completing the high-school course, he should spend four years in a first-class mining school.

Preparation for the metallurgical engineer is about the same in scope and intensity as that for the mining engineer.

THE INDUSTRIAL CHEMIST

The demand for chemists is such that capable men and women are placed before they graduate. The opportunity for advancement likewise is rapid. The introduction of efficiency methods in one paper mill caused the appointment of six additional chemists. The effects of the war are forcing manufacturers to improve their products and to devise economies, and thus additional chemists are required. Many factories are promoting chemists already on the staff to take charge of new departments and new laboratories, here again causing a demand for additional men. The salaries of men of average ability in their prime present an exceedingly wide range. Men who have good business ability, in addition to their professional training, obtain high executive positions, and some become officers in our gigantic industrial corporations. In general, industrial chemistry pays its capable men and women perhaps better incomes than any of the other engineering professions.

Personal qualifications and training. To be successful in this profession one should possess a strong liking or bent for the science of chemistry. He should be so constituted that the most interesting study in the high school and in his freshman year at college is chemistry. The particular group of mental attributes that should be his are not so different from those needed for success in other lines of engineering work: well-developed powers of observation, good reasoning faculties, keen insight, the commercial sense, a strong imagination, and, finally, strong self-reliance and initiative.

Following a high-school course, the prospective industrial chemist should receive from four to six years' training in university and technical school. If he can afford the expenditure of time and money, he will find three years of academic work and three years of technical training none too much to equip him adequately for his profession.

THE ARCHITECT

We have spoken of the architect in connection with the builders in Chapter XII. But his is a profession, and his work, while closely concerned with art and design, is essentially engineering in character.

Professor Frederick W. Revels, of Syracuse University, one of the two architects who designed the great stadium at Syracuse, makes the following statement concerning his profession:

Nature of this profession. Architecture as a profession is, in a sense, the *greatest* and *broadest* of them all, in that it requires the best preparation possible and eventually a most comprehensive knowledge of the varied activities of life controlling the requirements of design or construction for every conceivable sort of building. This sounds big; but these requirements are being met by some of our younger American architects as a result of extensive preparation and training at home and abroad.

The true architect is an artist, and the gratification of creating an artistic design is the thing he strives after. There is still great need for just such trained architects and artists, and this need will increase as our country expands and prospers. We are but at the beginning of our architectural development, and the American public is coming more and more to understand the importance of employing a first-class architect when it contemplates building a home, a place of business, or a great railroad terminal. The architect is the man who possesses, or should possess, the necessary knowledge and experience to design and carry out a great operation such as the New York Central Terminal Station in New York.

Training and its cost. Any young man who contemplates going into this profession ought to have the best preparation possible. It will tell in after years. First comes the high-school work, with special attention to drawing, mathematics, and some modern language, French preferred. If possible he should combine a college academic course with a course in architecture. Many cannot take the two courses, and the next-best thing is a thorough preparatory course and the college course in architecture, and after that travel and study abroad if possible. Foreign travel and study generally come a few years after graduation, when considerable experience has been attained.

OTHER ENGINEERS

There is a growing tendency to compare technical knowledge and skill in almost any field to the work of the engineer. Furthermore, every branch of engineering is itself being subdivided, and new names are constantly being used. The work of the following engineers is suggested by the names: safety engineer, highway engineer, aëronautic engineer, automobile engineer, heating and ventilating engineer, hydraulic engineer, naval engineer, structural engineer, textile engineer, construction engineer. Employment, or personnel, management is sometimes called "human engineering."

EXERCISES AND PROBLEMS

1. Is your city or town dependent upon engineering for its water supply? Outline the problems which have been solved.

2. Have the highway engineers done good work for your region in laying out roads? Describe their accomplishments.

3. Show the relationship of good engineering to the movement for "safety first."

4. Explain why mathematics is important to the engineer.

5. Can you give a report on the relationship of radioactivity to engineering occupations? Is opportunity in this direction likely to increase?

6. Can you find out anything further about the civil engineer and his work? If so, report to the class.

7. Discuss the surveyor in his relation to the civil engineer.

8. Can you find out other points than those we have given about any of the following: sanitary engineer, mechanical engineer, electrical engineer, mining engineer, industrial chemist, architect? If so, bring what you have found to class.

9. Does your own or a neighboring city employ a municipal or sanitary engineer? If so, what are his duties and what is his salary? Of what engineering school is he a graduate?

10. Is there any large industry in your neighborhood that employs an industrial chemist? If so, learn from him his specific duties,

and whether he has yet converted any by-product into a marketable commodity. Ask him about the problems he is trying to solve.

11. Are you near any valuable mines that are now being worked? Did a mining engineer discover them? Does he still direct the mining? Is a metallurgical engineer employed now in directing the preparation of the mineral for market?

12. After a careful comparison of the advantages and disadvantages of them all, which one of the engineering professions appeals to you as the most desirable? Give reasons for your preference.

13. A well-known engineer says that power to analyze an engineering situation is more important than mathematics or mechanical ability. What do you think?

14. Demonstrate the work of an engineer.

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CHAPTER XVII

THE LEARNED PROFESSIONS AND ALLIED OCCUPATIONS

THE PHYSICIAN

Qualifications. 1. *A vigorous body.* The doctor should have a strong and vigorous physique. If his practice is large, his work is especially trying. Calls may come at any hour of the day or night, rendering his hours for meals and sleep very irregular. It is only a sturdy physique that will enable him to stand this without his becoming nervous and irritable, two things which will lessen his success. The physician whose body supplies him with abounding vitality can, in spite of taxing demands, keep a clear mind and a strong personality.

2. *A cheerful temperament.* The physician should have an even temperament and a hopeful disposition. Since he is quite frequently called upon in emergencies, it is by his evenness of temper that he restores the confidence which upon his arrival is often sadly lacking.

No less important is his optimistic nature. The physician whose face radiates sunshine, whose step is buoyant, whose handshake is cordial, cures by his visits quite as much as by his prescriptions. No fact in psychology is more clearly demonstrated than that the mind influences the body. If the patient's mind, naturally melancholy and irritable during sickness, can be brought into a different state, cure is more rapid and more certain.

Young men planning to be doctors, consequently, should cultivate a habit of looking on the bright side of things. They should think good thoughts; read inspiring books; sympathize with those afflicted; and, not letting their patients'

troubles cloud their own minds, they should hold firmly the sanguine view that things will go better with calmness.

They should also develop the ability to meet people easily and congenially. The student who isolates himself until he is unsocial, out of touch with men, may know medicine, but he will not win success. But the vigorous young man, adaptable and cordial, has a source of power within himself.

3. *Honesty of purpose.* Honesty of purpose is especially important to one who enters into such intimate knowledge of his patients' lives as does the doctor. It is because men's hopes are easily raised by promises of health, the sick being noted for both extreme credulity and extreme suspicion, that healing has always been a choice field for the impostor. On the one hand, the doctor must recognize the good in any new and promising method of curing diseases; on the other hand, he must protect the public from fakes, patent-medicine "cure-alls," alluring advertisements, and tricksters. Let him keep as a sacred trust what is revealed to his professional ears. Let him beware of bragging, of false claims, or of pretended cures. People in general will give him the credit which is properly his.

4. *Love for the work.* The would-be doctor should have a great love for his work. There are years of toil and sacrifice ahead of the young man who starts out to become a physician, and only an inspiring and abiding devotion to healing his fellows can keep him persistently at his task until he reaches the goal.

It is evident that these four qualities are not possessed by every boy who, struck by the ease with which some doctor sets a bone and draws a big fee, decides at once to enter upon the study of medicine; but if he does possess the necessary qualifications, he may with profit consider the next step.

Preparation. To secure standing among your fellow doctors and to become able to make a success in your practice, you must attend a medical school of the first rank. Such a school

will demand drastic entrance requirements. A common-school education once sufficed. A high-school course is now the minimum, while the best schools are requiring two years of college work for entrance. And it may be that after a few years a college degree will be necessary before medical studies can be commenced.

The course itself has been made more difficult and requires four years of hard work. And since it calls for expensive equipment, the tuition is high. The laboratory work, in addition to the lectures, so fully occupies the time of a conscientious student that he cannot expect to earn much toward paying his expenses by doing outside work. Send for a catalogue of some first-rank medical school, look through its entrance requirements, its course of study, its tuition fees, and the living-expenses, in addition, which must be met, and estimate what this medical education will cost you in time and money.

2. *Graduate work required of the specialist.* Bear in mind, however, that this training equips one only for service as a general practitioner. In order to enter what is becoming an increasingly desirable field, that of the specialist, one needs additional training in his particular subject, be this the eye, the stomach, or the lungs; and this training calls for post-graduate work, either in some American or in some foreign city noted for medical study. It is needless to say that such training is expensive.

3. *Necessity of hospital experience.* But the cherished degree (Doctor of Medicine) once secured, your struggles are by no means over. It takes practice to make perfect. And a very good way to get this is to serve without pay as interne in a hospital. "Every conscientious physician procures a hospital diploma before going out into the world," says Dr. Shrady, former editor of the *Medical Record*; "and he learns more in that last year than he has learned in all his previous term of study." But this hospital experience completed, at last the time comes for hanging out the shingle.

4. *Location.* Upon a wise choice of location depends much of the doctor's financial success. In a community where the people are inclined to call little for medical services, or where several doctors are already strongly intrenched, he may find it hard indeed to meet expenses. And in his home community he is liable to lack prestige, for people knew him when he knew no medicine, and many are ready to doubt that he knows much now.

Habits of work. Medicine does not stand still, but is a rapidly changing science. "Probably no one of the professions," says Dr. Roosa, of the New York Post Graduate Medical School, "has made more progress in the nineteenth century, and stands in a more advanced position at the opening of the twentieth, than that of medicine." This means that the doctor must be always a student. He must keep abreast of medical improvements by reading professional periodicals and the latest textbooks. He must be eager to learn of new cures and new instruments. If his practice is in a country town, he should take a postgraduate course every few years, and come to the great city with mind as open as if to learn anew his profession. Unless he does these things, he will be left years behind the times, and his patients will desert him for some younger medical graduate.

Remuneration. The young man may wonder what are to be his financial returns for such earnest efforts. The physician usually has no stated salary. Much depends, of course, upon his location and professional ability; something depends, too, upon his business ability, high scientific attainments not always being combined with shrewd business sense. Some secure fees into the thousands, some scarcely any fees at all; but in general their incomes enable them to live comfortably.

Most revolutionary of all are the changes taking place in our conceptions of medicine. Today the emphasis is placed everywhere on the prevention of disease rather than on its cure. For example, see how preventive medicine operates in attacking typhoid fever. The older plan was to attend to the

sick individual; the present plan is to attend to the water supply, food supply, etc., so that the individual will not get sick.

The physician is thus becoming a public servant. He works not only to get disease out of the person, but also, if it be communicable, to drive it from the community. No one urges upon the public the menace of the town dump or the unfiltered water supply more earnestly than he. This knowledge he lays before the people in addresses, articles in the papers, or conversation upon the streets and in the homes. He makes known his investigations to his medical society in an address or writes an article for the medical journal. His reports to the board of health supply the public with a vast amount of free information. In all these ways the physician is not simply a carrier of prescription pad, drug case, and fee book, but a storehouse of valuable information which is being offered at every turn in the community service.

THE DENTIST

Dentistry is another profession which is making great advances, these being perhaps even more rapid than in medicine.

Advantages and disadvantages. Its advantages over other professional vocations are few, the remuneration, office hours, and the class of people with whom one comes in contact averaging about the same. But dentistry possesses at least one distinctive advantage; namely, contributing to the education of the public in the care of the mouth, the necessity of proper mastication, correct occlusion of the teeth, and the right way to care for them.

Its disadvantages lie mostly in the nervous strain to which the practitioner is constantly subjected, the unclean mouths and bad breaths he frequently has before him, and the years it takes to build up a practice. The cost of fitting up a dental office is also a serious item to the average young graduate.

Remuneration and advancement. After graduation there are two ways of proceeding: starting for oneself or working as assistant. In the first case you have for some time the problem of paying expenses, which is a long struggle for those who have but little financial backing and hard enough for those who have considerable money ahead.

In working as assistant you can generally start at a salary of twenty-five to thirty dollars or more a week, with a commission on all the work you do, and advance to as large a salary and commission as you are able to command by virtue of your speed and the quality of your work. In working as assistant you are gaining much needed experience both in dentistry and in the management of an office.

After one has finally become established in his own practice, his earnings will depend on several things: mainly the quality of his work, his personality, the appearance of his office, and the place where he locates. But a good dentist should be able to make at least three or four thousand dollars a year. The National Dental Association has estimated that two thousand persons should support one dentist, and since there are only about fifteen thousand dentists in the country today, it is clear that when the public is educated to dentistry,—a profession which is as yet in its infancy,—there will be need of at least thirty thousand more practitioners.

The average professional career of a dentist is about thirty years, but this depends on the care he gives himself. The nature of his work demands that he take plenty of outdoor exercise, and as he yields or does not yield to this demand will his period of usefulness be lengthened or shortened. It takes a young dentist about five years to get well started, and then, if he has shown himself to be efficient, his rise is rapid.

Qualifications and training. The natural qualifications demanded of a man entering dentistry are thoroughness, neatness, pleasing personality and appearance, and a mechanical turn of mind. Other qualities to be desired are a conscience

(as the chances for deceit and chicanery are many, since patients are usually ignorant of what is being done) and an æsthetic sense, to help in reproducing nature as far as possible.

The usual dental course is three years in length. As in the case of medicine, there is at present a strong movement to raise the requirements for admission and the grade of instruction offered in dental schools. Students interested in this vocation should consult catalogues of leading schools of dentistry.

THE PHARMACIST

Qualifications and training. It is not so difficult to enter pharmacy as either medicine or dentistry. The requirements differ somewhat in the various states, but usually two years of eight or nine months' study suffice. Admission to a school of pharmacy requires a four-year high-school course or an examination.

A young man who thinks of pharmacy as a career should be accurate: his work will include the handling of dangerous drugs, where a mistake may be fatal. He should also be of sterling character; for as he may dispense alcoholic liquors and narcotics, he must be able to withstand constant temptation. He should be interested in the activities of his vocation—the mixing of drugs, the solving of problems in chemistry, the meeting of people, etc. As a start, before taking up his pharmacy course he would do well to work for a time in some local drug store. In New York State, for instance, no matter from what school a man may be graduated, he cannot be registered until he has had two years of practical experience.

In this way he will be proceeding on definite ground when he enters upon his regular pharmaceutical course, and his previous experience may help him to secure a position in a drug store and thus to pay part of his expenses while attending school. When, as in some courses of study, only three

days' attendance per week is required, and a term of eight months leaves a long summer vacation, considerable spare time is available for work outside.

Nature of the work. The school of pharmacy prepares a young man especially for work behind the prescription case. Some young men prefer this work, and secure positions where filling prescriptions is the only task they are required to do. But there is also much to do as a salesman, the returns from prescriptions in many drug stores being only a very small part of the trade. The young druggist, therefore, should develop his ability as a salesman. He should know something about the soda fountain, the candy trade, patent medicines, cigars, and often paints and oils and food for stock. In short, he should become a good business man.

The hours are usually long; the work is confining and, to some, unhealthful. But the pharmacist occupies a good social position in the community and has an excellent opportunity to establish a store of his own. Should he desire to become a physician or a manufacturing chemist, his knowledge of pharmacy will be of value.

THE TEACHER

Education an important field of work. Education is another field in which considerable progress is being made. It is likewise one where clear thinkers and great leaders are needed. At the tap of the public-school bell every morning over twelve million pupils assemble to be taught. "Never have the people," says the United States Commissioner of Education, "shown more clearly their interest and faith in education and in schools of all kinds and grades."

Do you think that it makes much difference to us as individuals and as a nation what sort of teachers and instructors we give to our young people? Do you know that, next to your parents, your teachers have done most for you in shaping your habits of thought and speech, your behavior, your

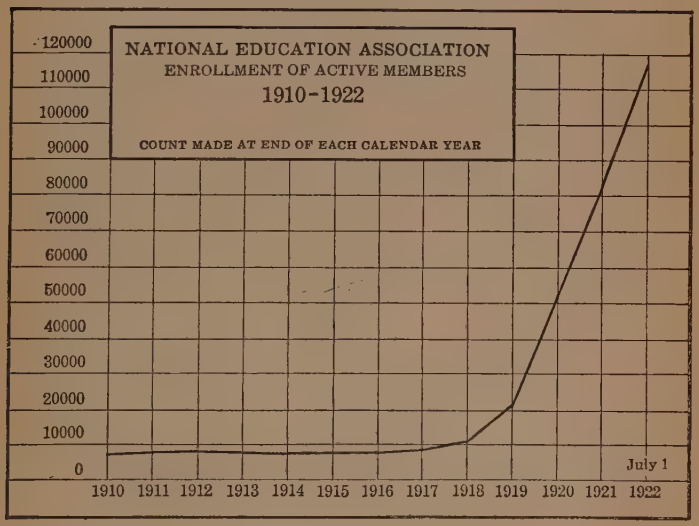
life ambitions and ideals—in short, your very lives? Do you realize that our schools are taking young foreigners from every walk in life, and that from this material, some of it very unpromising, they are making substantial American citizens? Again, do you appreciate the fact that our schools add vastly more to our nation's prosperity and stability than our army and navy combined? It may be that some of you desire to have a part in this field of educational service and hence are interested to learn about teaching as a vocation.

Wide range of positions and salaries. Since teaching positions range all the way from rural-school work at sixty dollars per month to city superintendencies and university presidencies at ten thousand dollars a year, it is evident that an equally wide range of preparation is required. In general, no public fund can be paid teachers whose qualifications have not been favorably passed upon. This means that usually an examination is required of the prospective teacher at the office of the county superintendent of schools, the city superintendent, or the state superintendent, the scope of the examination depending upon the position sought, the qualifications of the applicant, and the laws of the particular state. Information regarding qualifications and approximate salaries in any particular state can be received from the state superintendent of public instruction.

Positions in rural and graded schools. To receive certificates for teaching in ungraded rural schools, there is required a thorough knowledge of the common branches, a high-school education, and, in addition, at least a summer-school course or a year of normal training. To teach in the grades of city schools, as well as in an increasingly large number of rural schools, one must have completed an entire normal-school or teachers'-college course of two or three years' length.

High-school positions. In order to secure positions in public high schools or private preparatory schools, it is as a rule necessary to complete a four-year college course, although in some sections a normal-school course is accepted.

As we all know, the normal school is a professional training-school for teachers, offering instruction in education—its history, theories, practices, and methods of teaching. Likewise, in a large number of colleges today there are found similar courses in education to help equip students for the teaching profession. Such courses usually include practice in teaching.



Special teachers. There are certain changes going on in public education which are most noticeable in the new subjects of the later courses of study. Whatever subjects are uppermost in the minds of the people in general will sooner or later be taught in their schools. In teaching, as elsewhere, it is wise to take advantage of the popular trend and to prepare yourself for the service most in demand. Among the special lines of teaching in vogue today the work of the following teachers is perhaps most worthy of your attention:

1. *Commercial teachers.* Commercial courses generally require teachers of office practice, stenography, bookkeeping, commercial law, commercial geography, salesmanship, and

business organization. To secure such a position one should complete the high-school course, get all the practical experience possible during vacations, and attend some high-grade normal school with a business department or a school of commerce, preferably one located in a great commercial city.

2. *Special teachers of penmanship, singing, drawing, etc.* Closely allied to the commercial teacher is the teacher and supervisor of penmanship. He should have about the same educational training, but should also be an expert penman, able both to teach penmanship and to supervise others teaching it. Occupying similar positions in public schools are the teachers and supervisors of singing, drawing, and physical education. These all teach their one branch, and have had special training for their work besides the education received in high school and often in normal school.

3. *Industrial teachers.* There is a widespread demand for industrial training. It is pointed out that while the usual education fits students very well for entrance to college, preparatory to a professional course, still the majority of our students never enter the professions. And it is rightly insisted that the schools should train pupils for actual, not imaginary, careers. But when it comes to preparing young men for the trades, it is found, for instance, that the ordinary teachers do not know carpentry, and the ordinary carpenters do not know teaching. Hence there is a steadily growing demand for the industrial teacher, one who not only knows a trade but knows also how to teach it.

4. *Teachers of agriculture, manual training, and home economics.* Closely related to the industrial teacher are the teacher of agriculture, whose work was treated in Chapter IX, and the teachers who instruct boys in woodworking or girls in homemaking. These three special instructors require about the same preparation as the regular teacher, with the addition of special training in their particular branches.

5. *Vocational counselors.* The real test of whether the high school does good work is found in what its graduates

have proved their ability to do, the success they have achieved five, ten, or fifteen years after leaving school. This means that the schools are coming to a new point of view. They recognize it as their business to be interested in the practical means by which their graduates make good; in short, since it is in life work well done that the test really comes, the school must study the community occupations and the individual students and must seek to help each student find the vocation in which his training will be most effective. This is the work of the vocational counselor, a worker who gives educational and vocational guidance.

The teacher who gives this course can explain fully how to become a vocational counselor. The counselor's main activities are as follows: On the one hand, he learns what opportunities of life work the community has to offer and, on the other, he studies boys and girls and gives them some matter-of-fact advice, which helps them to select their life careers more wisely and to become more effective as workers and citizens. Hence his work in a community means a more purposeful education and a more successful living.

College positions. *Education required.* To many students a more desirable position than any of the foregoing would be a professorship in a college or a university. Young men deciding to become college teachers should select the particular study or department in which they are most interested, and then take all the courses offered in this during their four years at college, giving attention also to courses in several other departments. They should then—or, better, after teaching their specialty in high school or college for a year or two—study at one of the really great universities where men of international reputation give courses in that specialty. At the end of one year they may secure the Master of Arts degree, and at the end of three years the degree of Doctor of Philosophy. In order to secure a position in the best colleges and universities, three years' graduate study is usually required.

Supervising officers. Some persons have the ability to direct others and are especially fitted for executive work. In the field of teaching there are numerous positions in which executive ability of a high degree may be used to advantage. These include supervising a high school (the work of the high-school principal), the management of a city school system (the work of a city superintendent), the supervision of the schools in a county and in a state (done by the county superintendent and the state superintendent respectively), and the direction of a normal school, college, or university (the executive officer being called a principal, president, or chancellor).

These are all positions of honorable service and provide much better salaries than does the usual teacher's work. Nor is the work, to one of proper temperament and qualifications, a greater strain than that borne by the average teacher.

EXERCISES AND PROBLEMS

1. Can you interview a physician to find out what he says about the characteristics of his profession? Be ready to ask him definite questions, and report your findings in class.

2. Find out, if you can, something of the professional reading and study which all good physicians find it necessary to carry on. Is this an advantage or disadvantage in this occupation?

3. How can physicians help to prevent disease? Is this more important than curing disease?

4. Can you find out the relationship between the medical profession and the work of the dentist? Explain some of the connections between the two occupations.

5. Can you find out anything about what is called dental mechanics? What kind of ability is required for this work?

6. Investigate the occupation of an assistant in a doctor's or dentist's office.

7. See whether you can get access in a drug store to the license of a pharmacist. Tell what this license says and how it was obtained.

8. A high-school student once said he was going to study pharmacy so that he could make money by violating the prohibition laws. What is your opinion of such an ambition, and how can an attitude of this sort be corrected?

9. Can you tell anything of the work of a medical missionary?

10. What is the purpose of the profession of the teacher? Discuss this question in terms of individuals and of society in general.

11. Find out from one or two teachers whom you interview how they obtained their education and certification.

12. How should you like the position of supervising teacher? Would that work be more interesting to you than the work of teaching itself?

13. Have you a manual-training teacher in your school, or a teacher of agriculture? Describe the characteristics of his occupation.

14. Should elementary-school teachers be paid as much as high-school teachers? Give your reasons.

15. Should high-school teachers be paid as much as college teachers? Give reasons.

16. Tell why the vocation of the teacher should attract young men.

THE LIBRARIAN

Natural qualifications demanded. You may have an idea that library work is a calling for bookworms only. Yet, as the New York State Library School points out, "There are few lines of work in which more varied ability is desirable. A high degree of executive ability is demanded for the administration of a large library, with its many different lines of activity. Business judgment is necessary to make a limited income supply increasing needs in books, periodicals, and service. Literary skill is needed to determine what reading matter should be purchased to serve best the needs of the library's patrons. Much technical skill is needed in cataloguing and bibliographic work. Intimate knowledge of books and an equally intimate knowledge of human nature are essential for reference work."

Nature of the service rendered. "By strengthening and supplementing the school course, by promoting local industries through furnishing the best technical literature relating to these industries, as well as by furnishing reading for culture and recreation, the library may become a civic center and a real social force. In few other lines of work is it so essential to be thoroughly up to date and in touch with the life of the community, for no one can make books do their full service who is not in sympathy with the real life they interpret. Scholastic seclusion is no longer possible in an efficient library except in very special lines of bibliographic or clerical work."

Preparation. This is a sort of work which calls for worthy preparation; and if you are scholarly and cultured in your tastes, it will very likely prove enjoyable. A good way to begin library work is to become familiar while in high school with the library equipment at hand. Learn to use the card catalogue intelligently, and become acquainted with the magazine indexes, such as the "Readers' Guide to Periodical Literature." Make use of such works of reference as the "World Almanac," the "Statesman's Year Book," the Statistical Abstract, and various encyclopedias. It would be excellent practice to work up a bibliography covering the material in the library which bears upon some assigned topic of current interest.

It will be possible to enter a library school after completing the high-school course, but a college course is of decided advantage, and necessary for securing better positions later on. You will find wide reading essential and a knowledge of several languages most advantageous, since the successful librarian must be on familiar terms with all great literature of every kind. First-grade library schools are not numerous, but if properly prepared you can graduate from the best one in two years. Send for catalogues and investigate the courses.

THE JOURNALIST OR REPORTER

Advantages and disadvantages. The career of the journalist offers several special advantages: it keeps one in touch with events of the day; it affords the opportunity to meet leading men and women; it permits considerable freedom of movement and provides many interesting experiences; it furnishes opportunity for self-expression, a most basic form of human enjoyment; and it allows one to oppose evil and advocate good things for the benefit of mankind.

But there are also disadvantages to be considered. None but quick, accurate thinkers can keep up with the day's happenings. Before the dull thinker will have heard the first rumor, his competitor will have a full column on the front page. None but men and women of good manners and some refinement can secure news from leading men and women; certainly the semi-detective boor cannot interview the notable nor be assigned to follow the presidential candidate. Freedom of movement and interesting experiences usually mean irregularity of meals and sleep,—a strain to withstand which demands a strong physique. The write-up requires literary ability; and when good work has to be done at high speed, this ability needs to be of a special quality.

Starting-points for the beginner. There are various kinds of work in journalism. Reporters who are fond of sports may develop into editors of the sporting-page; others are bookish and may write principally book reviews; still others are absorbed in art, or the drama, or music, or society, or crime and the courts. Those who can do good work in more than one branch of journalism will have little difficulty in securing employment, while, on the other hand, they will probably find it hard to advance to a well-paid position. In general, the ranks are crowded, and it is not unusual for even a well-qualified young journalist to be out of work or at least unable to make an adequate living.

It is not hard to get the opportunity to try yourself out in newspaper work. Take hold of the high-school paper or annual, or write up news items for the local editor. He may take whatever items you are able to hand in. A very successful journalist of our acquaintance early in his senior year at college asked an editor whether he might not do reporting for him, and before graduation was earning on this part-time basis several dollars per week.

The best training. If the work appears to offer a career in which you can succeed, make definite preparation for it. First and foremost, obtain the broadest possible college course (or first two years) in languages, literature, philosophy, history, etc. If you are to have adaptability, you must be broad. Next attend a college which offers a strong course in journalism. Such colleges at present are very few in number, but they have already demonstrated their value.

Talcott Williams, former Director of the School of Journalism, Columbia University, writes:

> For thirty-five years journalists have watched the successive attempts to provide courses in newspaper work and establish professional training for journalism, in grave doubt whether the same measure of preparation could be provided for a calling which is at bottom an art as is furnished for callings like law and medicine, which are at bottom professions. The difference is clear. An art cannot be imparted without actual practice in it. In a profession the principles, knowledge, and method can be successfully imparted, and the practice can come later. "There is no way of learning to report but to report" has been the conviction of nearly every journalist who has been a reporter and remained a reporter, as every journalist should, to the end of his days.
>
> Work in a school cannot and does not turn a man into a journalist. A law school does not make a lawyer. A school of medicine does not make a physician. But every newspaper man who has trodden the hard and sterile path of the city room in undergoing his training, can judge for himself the value of this practical work in bringing a man to the newspaper office, ready for his tasks, knowing how to avoid mistakes and knowing, too, how to obey the orders of his superiors and do the assignments on which they send him.

THE MINISTER, PRIEST, OR RABBI

Kind of service rendered. The religious leader is one of the great educational and inspirational forces in the life of men. He has to do with the enrichment of human life, with the purification of the fountains of action, with the uprooting of the evils which afflict mankind, and with lessening and destroying the sorrows of the world. It takes men of as good caliber to make successful ministers, priests, and rabbis as it does to make successful bankers or other business men.

Education and remuneration. As is well known, prospective religious leaders should obtain all the education that high school, college, and seminary can offer. Their pastoral work later on will include constant study of the highest themes, close contact with all classes of people, and countless opportunities to help others and to uplift society. Consequently they should be of keen intellect and studious, morally sound, lovers of their kind, high-minded, with their ambitions set on spiritual values rather than on material success. While the young man looking for the material rewards of life will hardly be tempted to join this company, still good clergymen as a rule have a fairly good income. And the church-going public is learning that if it wishes good service from its clergy it will have to supply the necessary money to support a satisfactory life.

THE LAWYER

After having heard some eloquent advocate make his plea before the jury, you may have become fired with the ambition to be a lawyer. There is indeed a certain fascination in the practice of law. Its reasoning is keen and logical, its activities are in vital contact with men of affairs, and it furnishes the never-failing study of human nature, the fierce joy of forensic battle, and the opportunity to participate in public affairs. The law, too, is of personal service to a man, since it shows him what his rights are and how to defend

them. It is also of commercial value, a splendid adjunct to the real-estate dealer, collector, banker, or manufacturer.

An overcrowded profession. But the law is a very much overcrowded profession. In Chicago about one thousand lawyers have a fair practice, while some four thousand others are trying all sorts of plans to make a living. In New York City alone there are more lawyers than in the whole of Germany or of France. But in Chicago, New York, and other American cities only a small proportion of these men are really lawyers in practice; most of them eke out a living by selling insurance, dealing in real estate, reporting for papers, doing hack work for busy lawyers, or watching with hungry eyes for political jobs. Such activities do not constitute a desirable life career. And since so many young lawyers are forced to do these things, you should think seriously before entering law.

Personal qualifications demanded. Before you choose a vocation in which thousands of young men are not succeeding, you should ask yourself, Am I especially well equipped to push past these men and make good in law? This means, for one thing, are you able to resist temptations and keep your record honest? No tricksters can make a lasting success in law, which has its temptations that no weakling of a man is able to withstand and keep honest. It means, too, are you aggressive? For in law there is something of the fight in which a man must keep cool, smile calmly, and deliver telling arguments.

With this aggressiveness is needed keenness, a knowledge of when to strike. And to keenness should be added studiousness, the analytic mind, and the student zeal which, because they bring their possessor to the court room thoroughly prepared, win the case before the first juror is drawn.

Training and getting started. To *prepare* for law—not to enter law, for this is years ahead—a high-school education is required as a preliminary, and should be followed by a college course. The lawyer must be a well-informed man in

general, for in a lawsuit there is no estimating what he may be called upon to know. "The law reaches in every direction," says the late Justice Brewer, "touching every branch of knowledge and life. Every increase in civilization, making as it does the social and business life more complex, increases the demands for a larger storehouse of knowledge on the part of the lawyer."

As a result of this growing complexity of legal practice, lawyers are specializing quite the same as engineers, teachers, or physicians. Some devote themselves exclusively to criminal cases, others to civil cases, and still others to the law of corporations, trade-marks, patents, or property titles.

Most of the famous lawyers of the past studied law in the offices of established attorneys, but it is recognized that the proper training for the legal profession today is gained by attending, after graduation from college, a law school, whose course is usually three years in length. Upon completing this course the applicant takes the state bar examination, and if successful he is admitted to practice in that state.

The young lawyer is then ready to open an office or to become an assistant in some well-established law firm. This latter plan, if it can be arranged, is perhaps to be recommended. In either case, it is not uncommon for young lawyers to wait two, three, five, or even more years before they earn expenses.

Women of exceptional ability have for some time made good lawyers, and with the opening of political opportunity a greater number will prepare for and succeed in the law.

THE ACCOUNTANT

The accountant stands in about the same relation to the bookkeeper as the architect does to the mere draftsman. While the bookkeeper merely keeps records, the accountant is a member of a profession which is called in for expert services, just as is the lawyer or the doctor. If you will

glance at the tables in Chapter XXII, you will see some of the topics with which the accountant deals. He is able to go into a factory or store and find out all about the costs, recommend new systems of bookkeeping, discover whether or not mistakes have been made, and, in general, examine carefully and plan comprehensively for the entire accounting-system of the establishment. As *comptroller* he is sometimes engaged by a single establishment in a permanent position to plan the accounting-system of the firm and to exercise general supervision over all the financial transactions of the business. As *auditor* he may have a similar position, with the particular duty of certifying to the correctness of the accounts; or he may be called in by a number of firms at the end of a year's business, to look over and verify their accounts. As a *certified public accountant* he is qualified by law to audit the books of a firm and to furnish expert service in regard to financial matters.

The accountant can hardly achieve his training while he is a bookkeeper unless he has maturity and the perseverance necessary to do a great deal of outside study. Many correspondence courses which claim to teach accounting cannot really prepare the average person for this profession except in extraordinary circumstances. The departments of commerce of state universities and certain colleges are conducting courses in preparation for the work of the accountant, but even this training is often inadequate, and a graduate course is very much to be desired. It takes several years of accounting-study to become a certified public accountant, after which one must pass the state examinations.

This is a good place to call to your attention a combination profession: business and engineering. Many business men feel the need for a knowledge of mechanics, electricity, chemistry, and surveys, and many an engineer needs to know about industrial organization, cost accounting, labor management, and marketing. No doubt future developments will emphasize the need for men and women who combine these abilities.

FOR THOSE WHO THINK OF BECOMING PROFESSIONAL MEN

Overcrowding in the learned professions. The learned professions, it would seem, in general are overcrowded. Men often spend long years in preparation and in the end lead mediocre lives when the same effort would have brought them success in some other occupation. What causes this overcrowding? One reason, no doubt, is the prevailing system of education, which fits students for the professions rather than for anything else. The young man at the end of his high-school course, and of his college course too, often seems rather out of touch with practical affairs and, feeling himself above the work offered him, but keen as a student, drifts into law, medicine, or the ministry or, as a makeshift, takes up teaching.

This statement is in no way intended as a criticism of those students who early decide on a certain profession and resolutely push toward it year after year. Such earnest persons are an inspiration, and for them it is true that there is always room at the top. But many young men drift on in their studies year by year because it would take energy to stop. For these "room at the top" is a dream; their days will be spent among the many at the bottom.

Qualifications for entering the learned professions. If you are especially well fitted for a profession and able to make the preparation necessary, and if your heart yearns for this profession and this only, go into it by all means. Work forward and keep on working, for you are reasonably sure to win. But do not let some good examination marks or quickness in learning lessons inveigle you into a profession never meant for you; and do not imagine that winning the high-school debate proves your fitness for a lawyer's career. Such qualities may also fit one for a book agent. But in any case, whether it be medicine, farming, or blacksmithing, take a positive attitude toward it. Do not drift, or you may be

caught in some undesirable eddy. Choose the vocation in which you believe your greatest success will be found, and then pursue the education which best prepares you for that career.

EXERCISES AND PROBLEMS

1. What workers has your public library? Do they work full time or part time? Find out, if you can, what different kinds of work they do. Were they trained for their work?

2. Tell how a person can prepare to be a reporter and how he can begin work.

3. Can you interview a clergyman and find out from him something of the work he does and the characteristics of the occupation? Describe a theological school and tell something of the studies clergymen must prepare in.

4. Describe the different kinds of work a lawyer is likely to be engaged in. Which of these would be most interesting to you?

5. Tell something of the training required of lawyers.

6. Can you interview an accountant and find out about his work?

7. Show how the professional workers are absolutely dependent upon those who produce goods directly.

8. Show how those who produce goods directly are dependent upon the professional workers.

9. Which of all the occupations in this and the preceding chapters seem best to you and why?

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McKinley Junior High School Library

CHAPTER XVIII

HOMEMAKING AND ALLIED OCCUPATIONS[1]

This chapter is for both boys and girls, for a double reason. First, the home cannot possibly be a success without the coöperation of both the man and the woman, and therefore the boy who expects some day to be a husband must learn to cook, care for children, wash clothes, or clean a room, in case such help is required. In the second place, more and more men are encroaching upon the field of homemaking, to take out of the home work formerly carried on there and to put this work in the factory. This chapter is written that both boys and girls may understand what the home is for and how it is related to vocational life.

THE HOMEMAKER

The home as a workshop. Speaking vocationally, the home is a workshop. It has its power connection or power plant, its fuel, its supply of raw materials, and its tools for turning this raw material into finished products. Many American homes are still workshops for other things than homemaking; as, for example, when piles of materials are brought home to make artificial flowers or to sew on buttons, or when washing is taken in, in order to make a little more money for the support of the home. Some children in high school are supported by a hard-working mother who washes for neighbors as well as for her own children. Happily, the sweatshop (that is, the home room where clothes are finished) is now being rapidly done away with,

[1] We are indebted to Dr. S. Helen Bridge for criticisms in connection with this chapter.

and clothing manufacture, at least on a wholesale basis, is being done in the factory. There remain, nevertheless, even among apartment dwellers, many tasks requiring a great variety of abilities and a carefully planned workshop.

Homemaking is a composite occupation. A peculiar and interesting thing about the homemaker's job is that she does in the course of a day or a week a variety of kinds of work, any one of which may be the sole occupation of a worker in a factory, dressmaking establishment, or bakery. Thus her job is a composite one, composed of tasks as widely separated as cleaning a room and reading a story to a child. Consider the following list as representing the kinds of jobs the homemaker has:

cook	servant	dressmaker	teacher
baker	janitor	milliner	dietitian
dishwasher	launderer	nurse	buyer
waiter	cleanser	nursemaid	laborer

This composite nature of the homemaker's job makes her work at the same time interesting and very distracting. One distracting question is, for example, what clothes she shall wear for these various jobs, and how she can turn easily from one task to another, as she is forced to do. The team of four girls in a high-school home-economics department who prepare a lunch for four teachers can hardly imagine the task of a woman who is preparing a dinner all by herself, attending to a baby, answering the telephone, bringing all the items of the menu to the right condition at the right time, and finally sitting down well poised and happy with her guests.

A job analysis of homemaking. The following description of the possible responsibilities of the homemaker is given for two purposes: first, to show how varied and difficult is the job of the wife, mother, and homemaker; second, to suggest that the reader check off on this list the kinds of work in which he helps at the present time; and, third, to suggest to the reader tasks that are valuable to understand and in some cases useful for boys and girls to learn.

Job Analysis of Homemaking

Specifications: Wife and husband and three children (twelve, eight, and two). Small, detached house; no outside help.

I. General planning

1. Plan and advise with husband regarding location of home.
2. Plan and advise on house plans and specifications.
3. Plan garden, outside equipment, etc.
4. Plan furnishing of entire house, including permanent fixtures and movable equipment.
5. Study house for improvements and necessary changes.
6. Plan daily and weekly schedules of work.

II. Maintenance of home

1. Keep furniture and fixtures dusted and repaired.
2. Clean rugs, carpets, floors, curtains, and windows.
3. Keep things in their places.
4. Attend to bedrooms.
   a. Make beds.
   b. Change sheets and pillowcases.
   c. Air rooms.
5. Attend to bathroom.
   a. Keep fixtures clean.
   b. Replenish towels and toilet articles.
   c. Oil or clean floor when necessary.
6. Attend to laundry.
   a. Gather laundry and prepare it for sending out.
   b. Receive, check, and distribute laundry on return.
   c. Wash and iron things not sent to laundry.
7. Keep kitchen clean.
   a. Attend to stove: cleaning and ashes.
   b. Keep sink in good condition.
   c. Keep cupboards and pantry in good condition.
   d. Keep refrigerator clean.
   e. Wash, wipe, and put away dishes.
8. Make necessary arrangements for repairs and replacements.
9. See that gas, water, and electricity are furnishing satisfactory service.
10. Attend to bills (unless these are cared for by husband)—rent, taxes, gas, water, electricity, telephone, milk, ice, groceries, laundry, clothing, newspapers, magazines, etc.

11. Answer telephone and doorbells.
12. Attend to keeping up furnace.
13. Attend to ventilation of house, and its safety.
14. Be prepared to apply paint or varnish and to make simple repairs or coöperate with husband in doing so.
15. Purchase necessary equipment for house maintenance—such as soaps, polish, dust mops, vacuum cleaners, etc.

III. Food preparation and service

1. Purchase food materials.
2. Keep account of stock on hand and list necessary orders.
3. Secure appropriate menus for breakfasts, lunches, and dinners and suitable diet for young children.
4. Study purchase and preparation of materials for "substantials"—such as milk, cereals, eggs, meats, fish, beans, potatoes, macaroni, etc.
5. Study preparation of fruits and vegetables.
6. Study preparation of desserts.
7. Prepare food for young children.
8. Serve breakfasts at appropriate times for husband and children.
9. Serve lunches in accordance with school program of two older children.
10. Serve dinner for family.
11. Serve appropriate food for two-year-old child five or six times each day.
12. See that food is kept in appropriate receptacles and in good condition.
13. Attend to care of food in refrigerator.
14. Attend to canning and preserving.

IV. Clothing

1. For husband.
   a. Advise about purchases.
   b. Attend to laundering of clothing.
   c. Attend to necessary mending and pressing.
2. For oneself.
   a. Select clothing, hats, dresses, underwear, shoes, gloves, wraps, etc. appropriate for various uses and occasions.
   b. Attend to laundering.
   c. Attend to mending and renovating.
   d. Attend to storage or changes for seasons.

3. For twelve-year-old child.
   a. Purchase or make appropriate clothing for school, play, home, and best.
   b. Attend to laundry and mending.
4. For eight-year-old child.
   (As above)
5. For two-year-old child.
   (As above)

V. **General child care**

1. For twelve-year-old child.
   a. Teach child how to mend, and how to help with housecleaning, simple purchases, preparation and serving of meals, and care of other children.
   b. Teach useful activity, recreation, rest, neatness, cleanliness, obedience, morality, and religion.
2. For eight-year-old child.
   (As above, at least in part)
3. For two-year-old child.
   a. Provide playthings.
   b. Keep dangerous articles out of child's way.
   c. Teach child carefulness and caution in his behavior.
   d. Teach obedience and regular habits.
   e. Attend to ordinary wants of child.
   f. See that clothing and environment of child are satisfactory.
4. For all the children.
   a. See that baths are taken regularly, and teach self-help.
   b. Teach habits of cleanliness and other necessary bodily care: face, hands, hair, nails, teeth, elimination of waste matter, proper warmth, protection for feet, etc.
   c. Teach safety on the streets and supervise selection of acquaintances.
   d. Act as nurse in case of need.
   e. Make provision for children's participation in simple household tasks, beginning with care of their own things.
   f. Teach children to help each other and to get along well together.
   g. Make arrangements for music and other lessons (if any).
   h. Arrange for schooling of children, and consult with teachers occasionally about school work.
   i. Make arrangements for religious instruction.

VI. Recreation

1. Study the available methods of recreation.
2. Teach children right methods of play.
3. Advise with husband about family recreation.
4. Go with family on trips and excursions.
   a. Plan these trips.
   b. See that clothing and wraps are appropriate.
   c. Take care of children in crossing streets and boarding street cars.
   d. Supervise play.
   e. Settle difficulties.
5. Plan for recreation with husband alone—trips, theaters, concerts, calls, parties, etc.
6. Plan parties or celebrations for children, particularly on Christmas and other holidays.
7. Teach children correct ideals of recreation.

VII. Coöperation with husband

1. Plan with husband important matters about homemaking.
2. Coöperate in purchases.
3. Advise regarding husband's vocational progress.
4. Discuss important questions about children.
5. Consult on such important matters as moving, cost of living, promotion, vocational guidance of children, insurance, savings, and other problems.
6. Plan coöperatively such matters as membership in organizations, subscriptions to papers and magazines, purchase of books, music, etc.
7. Plan housework (regular and emergency) for husband and children.
8. Plan household budget and allowances.

The farmer's wife. This job analysis indicates the complexity of the problem, but these difficulties are multiplied as we try to find out the different kinds of jobs in different homes. For example, a recent survey of the farm woman's problem indicates that the average farm woman works over thirteen hours a day in summer and ten and one half in winter, 87 per cent of the women having no regular vacation at all. Seventy-nine per cent of them care for kerosene

lamps; 61 per cent have to carry water an average distance of 39 feet; while 94 per cent do their own bread-baking. Only 32 per cent have running water in the house; only 20 per cent have bathtubs; and 40 per cent do not have sinks or drains. On the other hand, 62 per cent have automobiles, and 72 per cent have telephones. Many farmers will wire their barns for electricity before they will install electric lights for their houses, and will provide running water for their cattle before piping it to the kitchen.

Obviously, the job of the homemaker on the farm is more difficult than that of her sisters in the city or village, and this condition of affairs must be improved. It is well that men who intend to be farmers should study carefully the vocations they are offering to the women they ask to marry them.

RELATED CALLINGS

The nurse. Many men are engaged in nursing, but far more women. What is sometimes called a practical nurse is a person of experience who has a great deal of common knowledge about the care of the sick and is able to make herself useful in emergencies; but the real nurse must have a definite training. She must first be a student or graduate of a high school and must then enter a nurses' training-school in connection with a hospital. Here she will obtain practical experience in nursing under the supervision of older nurses, and will have training in such subjects as dietetics, care of the sick, chemistry, physiology, and hygiene. As she completes her two-, three-, or four-year training she is fitted for general nursing or for a more specialized branch of the work.

The home nurse usually knows a group of doctors who give her name to their patients, and thus she is called into service, or she may register at a central office. She may have a position for a few days or for a long period of time, and must sometimes be on call twenty-four hours of the day, though severe cases require two nurses. She may sometimes have

to do simple housework and cooking in addition to nursing. She must follow the doctor's orders strictly, and notify him in case of need.

Institutional nursing is a more regular position. Here the nurse is engaged in caring for a group of sick persons in a large ward or in nursing a single person in a private room. Again, she may be the only nurse on the staff of an orphans' home, or she may serve in a hospital for the insane or a home for the feeble-minded.

Other specialized forms of nursing are connected with specialized hospital work, sometimes related to special forms of disease. There are nurses for the tuberculous, for children's hospitals, for surgical cases, for contagious cases, and so on.

The school nurse is engaged in advising children and their parents and in visiting homes.

The visiting nurse may be the school nurse, or she may be connected with a nurses' home or settlement. She visits homes for the purpose of teaching sanitation and cleanliness and of offering such advice as does not require the services of a physician.

The industrial nurse is connected with a factory or other establishment, is in the pay of the factory, and takes care of the minor illnesses and needs of the workers.

The dental nurse sometimes combines her tasks with simple office work. She aids the dentist in the simpler parts of his work, such as preparing drugs, cements, and other material for fillings, and in caring for his appointments and keeping his accounts. The dental hygienist is a kind of dental nurse who works either in a dentist's office or in a school. She may teach the children proper care of the teeth, and advises the parents when the children need dental service.

The doctor's assistant also is engaged in office work as well as nursing. She is frequently a secretary as well, and manages his outer office and his appointments as well as his accounts. When called upon for actual help in connection

with a patient, she assumes the duties of a nurse in the doctor's office and may supervise the aftercare of the patient.

All the above positions are well defined, and all offer splendid opportunities for service and satisfactory living. There are dangers and difficulties and unpleasant things connected with all forms of nursing, but some men and women like to solve such difficulties and are eminently successful in them. The nurse must have a double measure of tact, patience, strength, and poise, for she deals with sick people, who are sometimes not altogether responsible for what they say and do. Hard physical labor is sometimes hers. In spite of all this, she must have a large supply of cheerfulness and friendliness if her work is to be effective.

Dressmaker and clothing worker. The dressmaker, like the shoemaker of fifty years ago, frequently goes into the home to do her work; but even this custom is losing ground, particularly on account of the large number of ready-made clothes which are offered. Nevertheless, some home dressmaking is still required, particularly for remodeling and repairing. Dressmakers are required in shops where tailor-made clothes are made for women, and in department stores, to keep goods in order.

Much of the work in the making of clothes is now done in factories. The ladies'-garment and men's-clothing factories are engaging an increasing number of factory workers, who turn out clothes in much the same fashion as shoes and automobiles are manufactured.

Laundry worker. Laundering too has gone out of the home in larger and larger quantities. Many women have found on careful figuring—counting fuel, water, time, trouble, and all the rest—that the commercial companies or a special laundress offer an economy rather than an unnecessary luxury. The laundries offer a number of occupations, some of them commercial (like checking, marking, delivering, tagging, counting) and others mechanical (such as washing, ironing, machine-tending, drying, etc.). Laundry work on the operat-

ing side is becoming more attractive than it used to be, and is furnishing a worthy living for large numbers of men and women. Minimum-wage legislation has helped, since it says to the would-be laundry manager, "You cannot hire a woman for less than a certain wage, since society must protect its

PROVING THEIR PRACTICAL ABILITY

Home-economics students take charge of a hotel kitchen in Portland, Oregon. (Courtesy of the Oregon State Agricultural College)

members against the kind of work which would make them liabilities and dependents rather than assets." On the operating side and on the business side the work offered by the laundry is very like that of most other factories.

The waiter. What has been already said about the laundry worker applies likewise to the waiter. Constant improvement and the protection of a minimum wage have raised the status of the waiter to at least a fair position. Hours are usually divided into three shifts for the three meals.

Cooks, caterers, and other workers with food. We have not the space to describe the increasing numbers of workers connected with restaurants, tea rooms, cafeterias, clubs, hospitals, candy factories, confectioners' shops, and all the rest. The restaurant and tea-room business is like all other businesses where one is his own boss (anyone considering either of them should read carefully our statements on page 101). For those who are willing to work for others at a regular wage, there are such positions as head cook, assistant cook, chef, and caterer, and skill in these necessary occupations offers a high measure of satisfaction and remuneration.

The dietitian. The dietitian is an expert professional worker who plans meals and sometimes advises people in regard to their eating. Her work is particularly useful in hospitals and schools; she plans the menus for such institutions, and teaches nurses or others how to prepare the meals.

The baker. The following reasons why young persons of ability should consider the baking-business have been submitted by Mr. H. R. Clissold, editor of the *Bakers' Helper*.

A broad field of enterprise. Bakers today are doing only about half the business that should naturally come to them. Baker-made bread ought to have at least as good a place in public esteem as tailor-made clothes now hold. It is reaching out for that place, and is advancing toward it more rapidly than at any previous time; but there is much to be done before the goal is secured. The realization of this ideal is worthy of any man's ambition; its achievement will come only through the exercise of high purpose, clear thinking, wise planning, persistent effort. In the last ten years a quiet but radical transformation has been going on in the baking-industry; the next decade will witness the general recognition of the change. The baker is steadily coming to his own, and soon he will not (as too often at present) be thought of as a man of low ideals, of little ambition, of mean capacity for large affairs. A better chance was never presented to young men of character, of ambition, of energy, to take advantage of a rising tide.

The improved equipment of bakeries. Neither time nor space permits details of the revolution in the baking-business already referred to. It may suffice to say that the dark, ill-smelling cellar shop

is fast giving way to the specially designed and carefully built bakery, with plenty of light and fresh air, with hard floors and tiled walls, with lockers, baths, and white suits for workmen, with cleanliness and system everywhere. The science as well as the art of bread-making is studied; the microscope, the scales, and the testing-tubes of the baking chemist have an assured place; luck and chance in bakery operations have given way to intelligent and accurate control of conditions. Hand-mixing of dough is fast becoming obsolete; hand labor in the weighing and molding of loaves is being displaced by automatic mechanical devices. And the great improvements already made in equipment are but suggestions of further improvements. The baker has developed a new respect for the inventor and the machinist, and this trinity are working together for good today and greater good tomorrow. The baker's traditional conservatism has given way to an almost feverish desire for better methods, better appliances, better results. The atmosphere of the baking-world is such as to spur any intelligent, ambitious young man to do his best.

The servant. The housemaid, household assistant, or servant may be required, under the orders of the woman in charge of the house, to do any or all of the tasks listed in the early part of this chapter. There are obvious disadvantages, particularly the confining work, lack of social position, and the fact that women have seldom been educated to the right management of homes or of servants. On the other hand, if one can find a good place, there are compensations in the quiet, satisfactory nature of the work and the fact that a home is included with the job.

A recent tendency is to divide the work of the home, and have people who live outside it come in for a set number of hours to do special pieces of work, such as house-cleaning and washing and ironing. High-school boys have frequently made good at work connected with house-cleaning, beating rugs, etc. Many persons believe that the solution of the servant problem is the hiring of workers to come in during the day, perhaps some who come early and others who come later and do work through the evening. A servant of any sort needs strength, patience, perseverance, and a large amount of tact.

Decorators. The decorator usually engages in advising people about such matters as painting, wall-papering, curtains, shades, upholstery, furniture, rugs, etc. and in executing their wishes. He assumes also the task of providing decorations (whether tapestries, flowers, plants, furniture, or other objects) for parties and entertainments of various

TEACHER AND PUPIL IN A HOTEL

Courtesy of *Hotel Management* and of Grace M. Aird, Educational Director, Hotel Pennsylvania, New York

sorts. This work requires high-class artistic ability and constructive imagination coupled with ability in management.

Hotel occupations. The modern hotel business requires an army of workers of almost every kind described in the different chapters of this book. Carpenters, enginemen, elevator boys, porters, chambermaids, cooks, waiters, clerks, bookkeepers, managers, and many others are required. It is a business so vast that separate schools are being organized to train its workers, since it is found that neither home-economics departments nor schools of commerce can train workers fast enough or effectively enough. The various de-

partments are being studied, and job analyses prepared, on which will be based instruction sheets to teach new workers all the duties required.

Meanwhile one who wants to enter the hotel business will need to begin in a small hotel and learn as much as possible about all the different kinds of work, or, if in a large hotel, arrange to rotate among the several departments, in order to gain the necessary insight into the business. A study of commerce, engineering, cooking, furnishings, and many other items is required.

CONCLUSION

It will be seen from the brief survey in this chapter that both men and women are engaged in the occupations having to do with feeding, clothing, and housing our population. In fact, it would be possible for us to take each chapter, beginning with agriculture, and to show how the workers therein described are intimately related to the work of the homemaker. Thus the home is fundamental, since it provides for man's wants so completely. The homemaker, therefore, not only needs efficiency in her own work, and knowledge of how to simplify affairs by calling in the help of other workers, but she needs also an understanding and appreciation of the various tasks in which all the workers of the world are engaged.

EXERCISES AND PROBLEMS

1. Make a list of some of the things your mother or another homemaker does, and see how many occupations are represented by these tasks. You can use the index of this book for that purpose.

2. Discuss the question of how the woman is interrupted in her work in the home. Does this fact require anything like business ability?

3. Prepare a list of workers with whom the homemaker comes into contact in her daily work. Show why she must know something of their work.

4. Select a specific repair job which a man might do in a home. Show why the homemaker ought to know something of this work in order to see that it is done satisfactorily.

5. What can be said on the preparation which a boy should have for his success as a husband in the homemaking partnership?

6. Interview a woman in charge of a home who has served in an occupation other than homemaking. Ask her about the relation between her former work and her present tasks. (This exercise might be given to several students, in order that women who have followed a number of different occupations might be interviewed.)

7. Interview one or two husbands on the question of how a man depends upon his wife for advice about his occupational problems.

8. Can you interview a nurse or find out about her work? Tell the class what you find out about the characteristics of this profession.

9. Interview a laundry worker, or find out in some way about laundry work.

10. Can you interview a barber, waiter, cook, or baker? If so, report to the class.

11. Discuss from your own point of view the advantages or disadvantages of the work of the servant.

12. Show how the work in a hotel is similar to and different from that in a home.

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CHAPTER XIX

MISCELLANEOUS AND NEW OPENINGS

A number of miscellaneous and new openings will be presented rather briefly in this chapter, the last in which specific vocations are treated. Most of these occupations may interest you only as a matter of general information; but there may be one which will appeal to you particularly as a life career. If so, use the exercises, readings, and references to find out much more about this life calling than we have space to present.

THE PHYSICAL DIRECTOR

The world's work demands energy, aggressiveness, and persistence. Physical education for most men should not be made an end in itself, but only a means toward wholesome habits, bodily vigor, sound judgment, keen mind, efficiency in daily work. And it is because of this, and not the competitive element, that physical education rests upon a sound basis.

The work of the physical director. The really valuable service rendered by the physical director, consequently, is in such work as (1) giving physical examinations at the beginning of a course and mapping out appropriate exercises; (2) repeating these examinations from time to time and seeking to make the work most helpful to each member of the class; (3) conducting classes on the gymnasium floor, planning games in which all take part, teaching swimming, etc.; (4) counseling those who need advice on problems of physical welfare and moral strength.

Another phase of the physical director's work is supervising playgrounds. The truth is being impressed upon people

that children must be taught how to play, since in play there are great educative possibilities. All our large cities now have organized playgrounds, and the time is not far distant when these will be found in every city or village of five thousand or more population. This will mean an increasing demand for playground directors. It will also mean that many who serve as high-school directors during the school year will have the opportunity to take charge of playgrounds during the summer.

Training required. The training for work in physical education should consist first of a high-school course, during which you should take whatever work is given in your gymnasium and should play on all the teams possible. A general course in a college where there is a strong department of physical education is an advantage. There, as in high school, take part in athletics and learn to play all the games you can. Enroll, by all means, in the various courses offered by the physical-education department. It may be, as in a number of colleges, that these courses will be all that are needed to fit you for the work.

In most cases, however, the best preparation is not secured in college, but in a special training-school. Write to some of these schools for catalogues, and look through their courses of study to get an idea of what subjects are taught. Notice the expense and time required to complete the course, and also what positions are held by graduates.

Girls are receiving physical education in schools as much as boys are, and there is a growing demand for both men and women in this calling.

THE SOCIAL WORKER

People are interested in each other. They are coming to see that since we are all members of one body, if poverty and vice are unchecked it makes a difference to them personally. It has been found, too, that the old theories of "let

alone" and "do nothing" are fundamentally false, and that "the world only grows better because," as John Morley puts it, "people wish that it should, and take the right steps to make it better." Now it is because this large amount of work should be done in the proper way that there arises the need for trained social workers. An extremely varied field of activity is here presented, too varied for anything more than a brief indication of what it is like.

Organized charity. An old, old form of social work is charity. This, under approved methods, is managed by one central body, with some such title as "The Family Welfare Society." Here the attempt is made to provide sufficient aid to place a person or a family on a self-supporting basis, and also to prevent them from securing aid from several sources. In case a town or county renders such assistance, a farm is often maintained on which are kept those unable to support themselves. The state as well as the town also does considerable charity work. And in times of special need, as during floods or other disasters, the Federal government extends aid. All this work must be organized and supervised, and the results must be checked up.

The care of defectives and delinquents. The care of defectives is another long-standing form of social work. The blind, the crippled, the feeble-minded, the insane, cannot breast the world as normal individuals do, and for humane reasons must be sheltered. This is usually done in institutions, some being under state control, others receiving funds from county, city, or private sources.

There is also a delinquent class to care for. Boys and girls may be wayward and need the discipline of reformatories; or their needs may be met by juvenile courts and probation officers. Adults may show themselves unfit for social life, and as a result there must be jails, work yards, reformatories, and prisons, or other institutions where these unfortunates must be taught, guided, supervised, and, if possible, cured and restored to normal living.

The prevention of social misfits. While this work is all of importance and must be done, scientific social workers are no longer content to take the vast throng of social misfits —the dependents, defectives, and delinquents—and merely care for them. Such a task they have come to see gives no permanent results; new calls arise faster than old ones are attended to. So the emphasis is coming to be placed on prevention rather than on cure. The dominant note of the modern social worker is to reach out and save from distress, to crush the forces of evil which drive their victims by thousands into almshouse, jail, and prison. This gives a new point of view and a new field of work.

It means, for one thing, instead of doling alms, giving work. This requires a study of unemployment, industrial conditions, and employment bureaus. But many are too young to work, or have labored under conditions which have destroyed their ability to produce, or perhaps they never were qualified to do anything well. Here is a situation which requires a wide sweep of remedial and preventive action. There have been developed new measures in public health, conditions of labor, housing, employing, education, recreation, and religion,—new movements which will make better conditions and better men and, by the interaction of these, a better social order for all people.

Demand for various kinds of expert social workers. This means that experts in modern social work find employment in a number of different lines. There are such positions as those of the *investigator*, a person who can make visits and get facts; *writer*, one who can mold public sentiment through newspaper or magazine articles; *lecturer*, a speaker who carries on the reform movement through addresses; *legislative worker*, the man who realizes that the strong arm of the law should back a good measure, and who, by lobbying and bill-drafting, helps to get the needed measure on the statute book; *collector*, one engaged in raising funds, often by house-to-house canvass; *visitor*, one who may be a trained nurse,

a probation officer, or an unpaid friendly visitor; *office helper*, someone to attend to correspondence, filing-systems, tabulations, etc., as is common in usual office practice; and *executive secretary*, the one who perhaps has the most responsible position, his duties being numerous and, as indicated by his title, executive in nature. There are also settlement workers, club leaders, scout leaders, community workers, and hospital social workers. In addition to the social activities directed by various governmental agencies, private benevolence assumes responsibility for a greater part of this social-welfare service. Good openings are also to be found by trained men in the social work now being undertaken by a number of large commercial and industrial companies.

Preparation. In preparing for social work one should complete a high-school course, and a college course which affords some strong courses in sociology. Students should also elect work in economics, municipal government, public hygiene, and education. Graduate work is desirable, and continued study is necessary to keep up to date.

There have been established several schools for social workers, the one at New York being the best known. It is not necessary to be a college graduate in order to enter these schools, although some college work is desirable. Write for catalogues, and look the courses through and estimate the expenses. You should have no difficulty in securing a position after completing such a course. In case of a two-year course, plan to devote all your time to the school for the first year, and during the close of this initial year keep on the lookout for a vacation position. It may happen that during the second year you can hold some position while carrying on the course. Graduation finds such a young man prepared and easily placed.

The activities in a good high school offer the young person an opportunity to discover whether or not he or she is interested in becoming a social worker. Take a part in matters of school welfare, as a means of self-discovery.

THE CHRISTIAN-ASSOCIATION SECRETARY

The Young Men's and Young Women's Christian Associations require a number of workers—social, physical, religious, educational, vocational, business, and clerical. An account from one of the training-schools will indicate the general requirements for both men and women. The International Y.M.C.A. College says:

The secretary as a social minister to the men of our times must know the needs of the modern city, its religious, social, and civic opportunities for service. He should be a student of conditions and understand how to get at the sources of evil as well as how to deal with individuals. Religion must throw off the guise of authority and seek to minister directly to the needs of the individual man. An Association officer must learn how to present the new message that is in harmony with modern science and the results of Biblical scholarship.

A religious educator and social servant. Preëminently an Association officer, whether he be a general secretary, a boy's secretary, or a physical director, is a religious educator, and he should understand the problems of education. An adequate conception of personal work or personal service means an ability to help a young man wherever he may be in need. The physical director in the examining-room, the educational director in interviewing a student, the employment secretary in the presence of an applicant, are just as much engaged in personal work as the leader who talks with the young man after an evangelistic meeting.

The Association officer must also know the community in which he lives. An unrelated work is sure to be feeble. The Association is a civic enterprise to which have been intrusted large property interests and financial support. The community has a right to expect an adequate service in return. Duplication of effort and competition with existing agencies will not long be tolerated. An Association officer must know how to make a survey of the community which he serves and to become a dynamic factor in its life.

Organizing and executive work. It will thus be seen that in social service, in religious education, and in knowledge of modern life and thought the secretary for the present day must be equipped as never before if he is to be of use in the Young Men's Christian Association. An Association officer is not only a religious leader: he must also be an executive. The special characteristic which differentiates the

secretaryship from the ministry and many other lines of Christian work is the quality of being able to bring things to pass. Just as the minister is preëminently a preacher, as a professor is preëminently a teacher, so the Association officer is preëminently an administrator and an executive.

Business ability is necessary in all departments of Association service. An Association secretary should be trained in modern business methods. Efficiency is the watchword in administration today. Cost-accounting and a careful estimation and testing of every department is demanded by boards of directors and committees. An Association officer must know how to conduct an office and organize it systematically. He must know how to manage an organization, how to report existing conditions in an intelligent and forceful manner, how to enlist committee service and lead boards of directors and also his associates on the employed force in the particular specialty which he represents. He has also an important relation to the public, and must understand the problems of publicity and of influencing the public mind through the press, the pulpit, the schools, the municipal government, and other means.

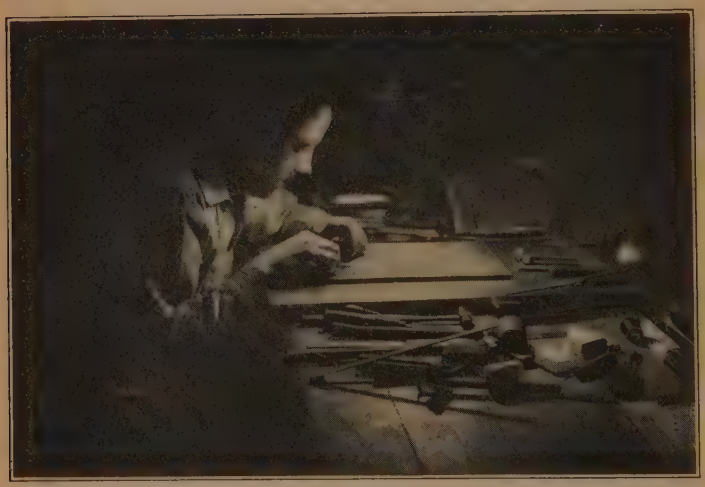
THE PRINTING-TRADES

There is a constant increase in the amount of printed matter demanded by the American public, and hosts of printers are needed to meet this demand. Their work has grown to be much more complex than when one man in his small plant edited and printed the local paper and did all the job work required. Now this man's activities would represent several different trades.

Typesetter. When Benjamin Franklin learned to be a printer, he stood before a "case" in which the type was kept in a series of little boxes. The young printer had to learn this case thoroughly, so that with his copy before him his hand could go quickly and accurately to the compartments containing the proper letters. And in many offices today the use of the case is still maintained; much of the typesetting, however, is now done by the linotype and monotype machines. Their use is perhaps best learned in short courses, maintained in most of the large cities.

Boys often commence by making themselves handy around the composing-room, and later are called upon to set type or to distribute it again into the proper boxes. While this may be readily learned, it takes time to acquire accuracy and speed.

Associated with typesetting is the work of proofreading. After the type is set up, a "proof," or preliminary impression,



THE ENGRAVER

This picture itself is an example of the engraver's work, as are the other pictures shown on preceding pages

is struck off, which is taken by the proofreader and compared in spelling, punctuation, and paragraphing with the original manuscript. This purely mechanical work does not exhaust the functions of the proofreader in large publishing-houses, where the work includes minor editorial features as well. Besides technical training the proofreader needs a good general education and an accurate knowledge of the English language. Many women serve as proofreaders.

Electrotyper. When a circular is to be made in a large number of copies, or a book set up which may run through several editions, "plates" are made, and impressions are

printed from these instead of from type. These plates are of hard metal, and the making of them requires several distinct processes. The workman is called an electrotyper, and usually is employed by a book-publishing house, a big newspaper plant, or a concern engaged exclusively in electrotyping for publishing firms. The wages are rather better than for typesetting, but positions are by no means so numerous.

A MODERN PRINTING-PRESS

Newspapers are printed, folded, and delivered automatically at the rate of a million pages per hour. Such a press, however, is but one of the many devices used in making the printer's work more highly efficient

Engraver. The pictures in this book, as well as similar pictures in magazines and newspapers, have been made by the halftone process. The work requires highly skilled persons, and is usually done by concerns making this their exclusive business. The demand for engravers is large, but at present there are few schools of instruction, and for most boys the only way open is through apprenticeship.

Pressman. In the pressroom the type and illustrations arranged in forms are brought into firm contact with paper by means of presses, and thus the printed sheets are made. The presses for printing range all the way from small job presses for printing cards to immense self-feeding cylinder presses of intricate mechanism.

Ruling, binding, embossing. Work in ruling, binding, and embossing is found in most printing-plants of any size, but this work is sometimes supplanted by the use of automatic machines.

Advantages and disadvantages of the printer's trade. One advantage of the printer's trade is the steady employment, possibly no other tradesman being more regularly employed than he. Again, his work may keep him in touch with new ideas, which may prove of particular value to him, as in the case, for instance, of a friend who was interested in law and whose work was setting type for new law books. As a rule, the printer's activities include sufficient variety to prevent any monotony in the day's work. Disadvantages are found in the possibility of lead poisoning, the bad ventilation in which job work and electrotyping are often done, and the night work required by the daily newspaper.

Qualifications for success. To make a success of this work, a boy should have good eyesight and sound lungs, accuracy and quickness of movement, and should not be afraid of soiling his hands. While a good common-school education is absolutely necessary, "if he is fortunate enough to have the advantage of high school," writes the Secretary of the International Typographical Union, "he will find the additional education obtained therein of advantage to him." Correct spelling, proper punctuation, and a knowledge of grammar are especially important.

Boys who have learned the business from the ground up and who have a love for the work may often do better by setting up in business for themselves. Many who do this, however, fail to make more than their regular wages, the reason usually being their lack of business ability. A young man should remember, then, that knowing the work and enjoying every phase of it is not enough, and should ask himself, Do I know how to buy the proper stock? to employ and manage men? to deal with customers and work up a good trade? to keep careful oversight of my business so

that I can tell where the losses are and where my profits come in? An ambitious young printer who can answer these questions satisfactorily, or who can learn to do so, has good prospects for success in a business of his own.

THE ARTIST AND ILLUSTRATOR

The vocation of the artist and illustrator may call up visions of great painters, like Millet, Landseer, or Turner; but what is meant here is a much more ordinary sort of work, which, although perhaps less in favor among artists themselves, is demanded by business and serves a useful purpose. We have in mind distinctly commercial work.

Novelty painter. In the work of the novelty painter such articles as powder-and-puff boxes and other celluloid articles are decorated by hand. Combs too are painted, the designs usually being engraved beforehand and the gold applied with a small brush. Neatness and speed are necessary. The work is seasonal.

Catalogue illustrator. The mail-order houses issue catalogues twice each year, and the wholesalers lay before their trade the latest designs in costumes, fabrics, trimmings, buttons, braids, etc. Fashion artists are employed to copy these, often in full color, featuring the strongest selling-points. These copies are usually paid for by the piece. This same work is also utilized by the houses dealing in patterns. Part of this illustrating, such as that in catalogues issued by high-class jewelry firms, requires no mean ability and is well rewarded.

Magazine illustrator. There is great demand among the magazine publishers for attractive cover designs, appropriate decorations, and illustrations for stories. Sometimes the designs are suggested by the editor, who employs someone to do the sketching for him. More often, however, the drawing is produced by some independent artist and submitted by him to whatever magazine he thinks may find it suitable.

If he shows ability to turn out usable illustrations when needed, he may secure the firm as a regular customer.

Book illustrator. To illustrate a book satisfactorily requires considerable skill as an artist and the rare ability to work well with both author and publisher.

Advertising illustrator. The work of the advertising illustrator perhaps offers, at present, the best-paying of all fields for the commercial artist. As much as one thousand dollars has been given for a full-page drawing. When it is realized that a full-page advertisement on the back cover of some of the big magazines costs for one number of the publication as much as ten thousand dollars, it is clear that the drawing may be cheap at the price stated above. Advertising, in the main, is bought and sold like other commodities, this work being done by advertising agencies. Some of these agencies have a staff of artists in their regular employ. Any artist, however, who has a drawing may submit it to these agencies or to some one of a very few companies who deal exclusively in advertising-illustrations. For success in this work, it may be added, the artist needs a sense of commercial values and some knowledge of the principles of advertising.

THE PHOTOGRAPHER

Use of a plate camera. If you are seriously interested in photography as a career, get a plate machine such as the professionals use. Read the instruction book with care, visit some photographer to see how he does the work, and then fit up a dark room. Begin to take pictures, and try to do better each time. Subscribe for some good magazine and read some books on photography.

Necessity of business ability. Does this business interest you as a life career? If so, choose some successful photographer and learn the business with him. You will find several kinds of work to do. First, there is the purely business side. A studio must be rented, supplies purchased, adver-

tising placed, and displays made. While this may seem little like photographic work, to neglect it means failure. Photographers in whom the artistic sense is highly developed are apt to neglect these things, and thus fall far short of the financial rewards they otherwise deserve.

Taking pictures. When the photographer is ready for business, the pictures must be taken. Here is an activity requiring skill in dealing with people, as well as photographic knowledge. The operator has need of the salesman's ability when it comes to finding out what is desired or to stimulating a new demand. It requires a high degree of tact to get natural poses: people must be cleverly entertained and made to forget, as far as possible, that they are having their pictures taken. It also requires a high degree of art to pose them so that their strong and attractive qualities will be brought out clearly.

Developing and retouching. After the picture is taken, it must be developed. This is an intricate chemical process; the good dark-room operator must know the influence of each chemical element in the developer, and if he is able to work in harmony with the one who takes the picture, a better negative results. The negative once made is next retouched. After retouching, the prints are made and the picture is finished. These tasks are frequently performed by women.

Much depends upon the size of the business as to how specialized these processes are. In small studios or in those catering to a select clientele the proprietor may do all the work himself. In larger studios one person may serve only as operator, another as printer, etc.

Commercial photography. In addition to studio work, as described in the preceding paragraph, the photographer may take pictures of machinery for manufacturers, of houses for real-estate agents, of parades or other special occurrences for newspapers, and the like. Such work is known as commercial photography, and in the large cities, especially, it affords employment for many workmen. Some of these

artists are outdoors much of the time (as the operator of the motion-picture camera); others work indoors (as the maker of stereopticon slides or copier of photographs in an engraving-house).

THE AVIATOR

Aviation had such a tremendous stimulus in the war that it is bound to be an attractive and profitable field for young men of the future. Passenger service between London, Paris, and Amsterdam is so well established that its success is beyond question. Mail routes in the United States are well established also. Transcontinental and transoceanic flights will, no doubt, shortly be common, and the use of the seaplane adds a large factor of safety. Passenger and mail business, and perhaps the carrying of light packages, are bound to become permanent features of our transportation facilities.

It is said that for every aviator there must be from twelve to twenty men on the ground, helping to keep his machine in shape and to do other necessary auxiliary acts. The work of these persons is clerical and mechanical and does not differ greatly from the work in railroads and garages. The aviator himself must be a person of coolness and bravery, well able to take care of any emergency that may arise.

According to the manufacturers of airplanes, 87 companies in the United States carried 225,000 air passengers in 1920 without one fatal accident on record. The great majority of the accidents have occurred during stunt and exhibition flying or experimental flights. The Army Air Service flew over six million miles; the Naval Aviation, one and a half million; and the Aërial Mail Service one and a half million.

The engineering opportunities in aviation we have touched upon in Chapter XVI. Recent experiments with gliders, helicopters, and small airplanes indicate interesting vocational possibilities—in research, construction, and transportation.

THE ACTOR

The development of special gifts is a necessity for the work of the actor. These gifts have often been developed in high-school or college dramatics, and some experience in acting should be valuable to every person as a constant source of recreation and cultural interest.

The work of the actor is so extremely interesting and fascinating that many persons persist in it even at a sacrifice of financial gain. To one "star" there must be from ten to one hundred people who do the common work, such as the singing, crowd scenes, chorus work, or the rest, or who have decidedly minor parts and very little to do. Furthermore, the work is irregular. There is a season off in almost all lines of acting, and the work involves risks such as the failure or only partial success of a play, no matter how well it has been rehearsed, and the consequent disbanding of the company in the middle of the season with loss of job. Family life too is bound to be irregular on account of the hours and the traveling. The profession is at the present time much over-crowded.

The kinds of actors represent all phases of human life, serious, romantic, humorous, musical, tragic, comic, artistic, —in fact, every phase imaginable. In vaudeville mere cleverness is often capitalized, a kind of cleverness which is quite useless off the stage. A vaudeville actress described her work in the course of her act with the remark "It's silly but a good living."

The preparation of the actor involves long, hard work, study, drill in the proper parts, and attention to the kind of exactness without which the performance would not be successful. If one is satisfied with a mediocre position, he will not need a great amount of education; but for the kind of preparation which allows one to take advantage of opportunity for promotion, even a college education is extremely valuable.

MOTION-PICTURE WORKERS

The motion-picture business is a gigantic enterprise and is not confined to any one locality. First there are the scenario writers, whose work is vastly different from that of the ordinary author. Next there are the research workers, who dig out of histories, libraries, and museums the necessary knowledge of geography, customs, architecture, and costumes of the play filmed. The location people decide where to stage the picture. The directors are general managers of the picture, deciding how the actors and photographers shall do their work. The scenic artists are called upon for the production of interior and outdoor effects, and for designs for the construction of houses, gardens, and furnishings and other such properties. The costume-design people and the costumers arrange for the design and production of the necessary costumes. The property officials and a force of assistants are needed to classify, arrange, repair, keep in order, put away on shelves, and locate and furnish on short notice all the varied objects required.

One of the most important groups among the workers consists of the make-up people, who prepare the actors for being photographed. Then there are the electrical force, who are able to produce any lighting-effect required, and the photographers, or "camera men," who "shoot" the picture. This work is sometimes dangerous, on account of the positions required for taking the scenes.

Next there are the workers who develop the films, and the authors who study them and write in the subtopics.

Clerical work, advertising, salesmanship, correspondence, and various other lines of work—such as that of the purchasing department, auditing department, yardmasters, gatekeepers, and all the rest—are required here as in any large undertaking. Let us not forget also the force of mechanics, carpenters, scene-shifters, porters, and others required to make the work a success.

The work of the "movie" actor is not greatly different from what we have said above about the actor. However, remember that what you see upon the film is a very small part of the work performed by the motion-picture actor or actress. We visited a studio for something like three hours and saw not more than a total of ten minutes devoted to turning the crank of the camera. There are seemingly interminable periods during which the actors must wait, sometimes thinly clad, in the cold, wind, or heat, while properties are being put into position. Then there is tremendous physical work required in the rehearsals.

Refuse to be fascinated by any occupation, and above all do not allow fascination alone to lead you into the motion-picture business. One of the well-informed men tells us that as yet the business is not standardized enough to indicate very clearly what the requirements are, nor even what are the various positions available, but that within the next ten years there will be very much more definite information available.

THE MUSICIAN

The musician's work is attractive in nature and usually brings him in touch with cultivated people. It also provides much opportunity for advancement, since a musician of established reputation is sure of increasingly frequent engagements at terms of a very satisfactory sort.

Education and training. A good general education is required. An appreciation of art and poetry and a knowledge of some foreign language are desirable, although many masters and teachers have not had even these. The actual musical education should be commenced in childhood, kept up several years in private lessons, continued either by a conservatory course or under further private teachers, and, for the best preparation possible, completed by extended study abroad. This, of course, means a long and expensive preparation.

However, before he has completed his course of study a student may find some remunerative work to do, such as singing in church choirs, playing at receptions, restaurants, and theaters, etc.

Remuneration. The profession, however, is overcrowded. This may be due in part to the fact that many people cultivate music as an accomplishment or mark of leisure, and others, who would seem to belong to such a class, are content to accept small returns because of the social desirability of music. It appears, then, that a part of the rewards must be sought merely in a love of the work.

The financial returns may be increased by engaging in several related musical activities. For instance, one successful musician directs a band in its evening rehearsals, on other evenings plays in a theater orchestra or at receptions, and during the day gives private lessons on violin, guitar, cornet, and piano.

Combination with trades. Still other musicians, especially those who play in bands or orchestras, follow some regular trade during the day. For instance, in a recent issue of the *International Musician* appeared this notice:

> WANTED—First-class violinist and cornetist who are expert cigar-makers by trade (union men only), to locate in a city of 10,000, to play in theater and dance orchestra; fine opening for steady men.

Of course, a musician's life is apt to mean irregular hours of eating and sleeping, and the result is a strain on the nerves and health.

EXERCISES AND PROBLEMS

1. Can you describe the work of a physical director on the basis of an interview?

2. Why is it necessary to have social workers? Are they more needed in cities or country places?

3. Can you interview a Y.M.C.A. secretary, to find out about both his work and the other positions in the Y.M.C.A.?

4. Make the same investigation for the secretary of an association of similar scope.

5. Describe the work of employees of a printing-shop.

6. Do you know of any artists? Can you find out something of the work of the artist as a life vocation?

7. Can you interview a photographer and find out the advantages and disadvantages of his occupation?

8. What do you think is likely to be the future of aviation as a field of service?

9. What are the advantages and disadvantages of the actor's calling?

10. What can you add to our treatment of the opportunities in the motion-picture industry?

11. Can you describe the work of a musician or a teacher of music on the basis of your own personal knowledge or investigation?

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For further references see our general list at the back of the book, especially Allen, Giles, and Jones.

PART III. VOCATIONAL ADJUSTMENT

CHAPTER XX

CHOOSING YOUR LIFE WORK

A very serious matter confronts you—the investment of yourself, all your energy, thought power, hopes and dreams. It is the most important decision you have ever been called upon to make. If you had fifty thousand dollars to invest, would you not proceed with great deliberation, investigate every market, talk with people who knew the facts, and guard carefully this money in the meantime? You have more than that to invest, for you would not take twice fifty thousand dollars for yourself. You are to invest yourself in some vocation—to give mind, muscle, and ambition freely at its demands, gradually to give up all thought of ever doing anything else than this, and to work faithfully in its service for thirty, forty, or fifty years. Are you giving this one really big investment the attention it deserves? Let us consider carefully the details involved.

The vocation itself. The various life occupations have been laid before you. You know something of their requirements, conditions for success, advantages and disadvantages, and the compensation. You have worked through a number of exercises which have yielded you much information, especially concerning the conditions in your own community.

Either at home or elsewhere there is some excellent place for you. Do not believe those carpers who say there are no good openings left. In this busy world, where tremendous things are increasingly being accomplished, men and women able to do efficient work were never before in such demand.

When you come seriously to choosing your life work, a vocational service suited to your needs and ability can be found.

Your adaptability for the vocation. It is not alone the vocation, as one is apt to think, but the *vocation in relation to you* which demands to be considered. "Is banking a good vocation?" Certainly. "Then I'm going to be a banker." It may be the greatest mistake you ever made. You like pulleys and belt wheels and tools and overalls; the bank would be a prison, but the machine shop would probably be a satisfying place. Again let us impress upon you that it is not merely the vocation but the vocation in its relation to yourself that you must consider.

Comparison of your qualifications with those demanded by desirable vocations. You have certain strong qualifications. They are your "fertile fields." Cultivate them with your best effort, and rich returns will be the result. You will be doing something that you can do well, and success as well as contentment will be yours, while the day's work will seem short and agreeable when once you have chosen your proper vocation.

But how is this to be done? How can you find these fertile fields? *You must analyze yourself.* You are to take this list of qualifications,—"straws which tell the way the wind blows,"—go through it point by point, and see what you can find out about yourself. You must make a self-inventory of your strong qualifications. No merchant could conduct a successful business if he had no idea of what was in the stock room, in the basement, on the second floor, or on the shelves. Like the successful merchant, take stock of yourself, using as a guide the chart on page 338.

When to choose the occupation. The above analysis should be made for a number of occupations; for until you compare yourself and your abilities with the requirements of all the occupations you have ever thought seriously about, you can hardly have a basis for real choice. Therefore do not choose now: put off the decision as long as it is safe.

A Score Card for the Occupation and Yourself[1]

(A Comparison of the Needs of the Occupation with your Ability)

NAME ..... DATE .....

Qualities required for success in the occupation of .....
and the qualities I can develop in that occupation.

Directions: This exercise is planned to aid you in thinking about your future occupation. The first column relates to the qualities demanded by the vocation; the second, to the qualities you can develop if you choose to enter that occupation. At the bottom are spaces for additional qualities required. Mark an X in the appropriate column: 60, very little; 70, not very much; 80, average amount; 90, above average; 100, very great amount.

	Vocation Needs					I can Develop				
	60	70	80	90	100	60	70	80	90	100
1. Ability to attend to details										
2. Ability to coöperate; tact										
3. Ability to follow directions										
4. Ability to lead other people										
5. Ability to use good English										
6. Accuracy										
7. Adaptability to change and surprise										
8. Cheerfulness										
9. Common sense; good judgment										
10. Courage										
11. Courtesy										
12. Earnestness										
13. Ideals of good citizenship										
14. Ideals of honesty										
15. Ideals of service and unselfishness										
16. Imagination; foresight; planning										
17. Initiative; resourcefulness										
18. Liking for work indoors[2]; outdoors										
19. Liking for sameness[2]; variety										
20. Mechanical skill										
21. Mental ability and capacity										
22. Orderliness; system; neatness										
23. Perseverance; industry										
24. Physical strength, health, and vigor										
25. Promptness; punctuality										
26. Responsibility; trustworthiness										
27. Self-control; patience										
28. Sense of humor										
29. Speed of work										
30. Sympathy										
31.										
32.										
33.										
34.										
35.										

[1] This card is copyrighted, and reproduction rights are reserved. Copies of it and of a simpler one for junior-high-school pupils, may be obtained from the C. H. Stoelting Company, Chicago, Illinois.

[2] Cancel the quality not required by the vocation.

Of course, it is sometimes necessary to make a tentative choice, and even to take a position for the purpose of earning money; but that is not necessarily your final decision.

A process of elimination. After you have studied a number of occupations, you should read again the suggestions for studying occupations and for discovering your own abilities as given in Chapters VII and VIII. You may now begin to narrow the choice. Suppose you are thinking about being an engineer, teacher, toolmaker, draftsman, or farmer. From all your studies and comparisons it appears that you are not very strong in the qualities which the engineer requires. It is well, therefore, to eliminate the occupation of engineer from consideration and go ahead with the study of the others.

Another way to assist in the gradual elimination of those you should not consider, as well as to find those for which you are fitted, is to use vocational experiences. Saturday, late-afternoon, and vacation work may be utilized for testing yourself in the various tasks required. Thus, if you are thinking about being a merchant, you should spend one vacation in a dry-goods store and another in a hardware store, or try your hand at furniture or possibly in a grocery store or in a lumberyard. Keep your eyes open and study every possible opportunity. Perhaps you can get an opportunity to assist as a nurse, or to help a rural school-teacher, or to work at a telephone or sales counter. Your principal or superintendent may know of such openings. In fact, employers often ask high-school teachers to recommend students, and the vocational counselor (if you have one) can help you both in deciding what to try and in obtaining the positions. You may not earn a great deal while testing yourself for these different vocations, but you ought to regard the experience gained as very valuable.

Is a trial choice possible? After such experimentation you may actually get a position in an occupation; but do not even then consider your choice final. Seize every oppor-

tunity to learn while you are holding the position, and try to succeed in satisfying those who direct you; but use this opportunity to get a closer view of your own interests and abilities.

A comparative study. The outline on page 17 may be used for comparing the occupations you are considering. List the eight points of the outline down the left-hand side of your paper, and draw vertical columns for marking each occupation. At the tops of the several columns you may write Nurse, Teacher, Stenographer, Telephone Operator, and Toolmaker, or any other callings you are studying. After the first item of the outline (Importance for the welfare of society) score 10 points for the occupation that is higher than all the others, 9 points for the next-highest, 8 for the next, and so on. For Disadvantages mark the occupation which has the fewest disadvantages 10 points. Add up each column to obtain the total scores. The outline on pages 98–100 follows the same main topics as that on page 17, and may be used as an aid in the scoring.

EXERCISES AND PROBLEMS

1. Write down the names of ten occupations which you are considering or which you have thought about in the past in reference to your own future. Leave a space after each occupation, and write in some notes suggesting the reasons which influenced you to consider it.

2. One occupation with which you are familiar is that of the teacher. Copy in your notebook the index numbers 1–30 of the chart on page 338 and fill in the first of the two columns to the best of your ability. Bring the result to class and compare it with the judgments of your classmates. Fill in the second column for yourself in reference to the occupation of the teacher. Remember that all persons need some teaching ability in most of the relationships of life. Especially is this true for the future job of parenthood.

3. Use the chart to analyze the personal qualifications needed in some occupation other than teaching which you are considering. Then check up your own qualifications in reference to this list.

4. Arrange five occupations you are considering in the order of your present preference. After each give the reason for placing it where it stands on the list.

5. Write a paper or give a talk telling the ways in which you intend to study these five occupations. Show how you will eliminate them one by one as you make your final choice.

6. Work out five or six comparisons on the basis of the points given on page 17, as suggested in the paragraph just before these exercises.

Who can give you advice? It is difficult and usually unnecessary to obtain advice on personal questions, because these matters you should settle for yourself. Thus, if you ask an employer, "What do you think of my work?" you make it very hard for him to tell the truth if he has criticisms in mind, because he does not know how you are likely to take complaints. A better way is to ask for suggestions for improvement. Tell him frankly that you are not at all sure yet of your final choice of occupation and should be glad to hear any suggestions or criticisms which he may have to offer. The same thing is true in regard to talking over questions with your parents. A few parents are more interested in obtaining the earnings from their children than solicitous about what their children's occupational life is likely to be twenty years from now. If you are so unfortunate as to have parents who take this attitude, you must remember that your parents need such education on this question as you or your teachers can give them. Invite them to talk with the teachers and principals about your future, and show them the service you have to render to society and your own future, your wife, and your children, as well as the duty you owe to them as your parents. Most parents are willing to aid in every way possible. Quite often, nevertheless, they are biased about you and do not quite understand what qualities you have. Sometimes they know your weak points better than your strong points; but this is usually your fault, because you fail to show them by what you do in the home

the good qualities you have. However the matter stands, talk with your father and mother and with older brothers and sisters about this business of choosing an occupation.

Consult also with school people. If your school has a teacher of the class in occupations, this teacher is naturally interested not only in instructing the class but also in helping you to settle the individual problems which arise. It is possible that he has some particular time during the school program for consulting with individuals, and even for helping them after they have left school. If so, take advantage of this fact to arrange an appointment. Without being obtrusive or selfish, ask this teacher or counselor whether he can give you an answer to your questions or can aid you in finding the proper source of help.

It is sometimes claimed that men should always advise boys, and women, girls; but this is not necessarily true. You should not expect your teacher to be a walking encyclopedia on the question of wages, and of advantages and disadvantages, but rather to aid you in finding out where you may obtain information.

Libraries are helpful if you make it clear to the librarian just what you want. Tell her whether you wish a book to help you decide on a given occupation, or the kind of book which describes, for those who have already decided, how to prepare for the occupation. We have already referred to Frederick J. Allen's "A Guide to the Study of Occupations," published by the Harvard University Press, which is on file in most libraries. This book, under each of the common occupations, gives a list of references for reading.

Avoid false guidance. Avoid all the books which tell you about short cuts in the matter of choice. In some of the best magazines there are advertisements of this kind. One kind of false guidance is sometimes called character analysis. It is based on the assumption that one's character can be told by a careful study of his physical characteristics, particularly his nose, eyes, hair, skin, mouth, ears, etc. There is

no more sense in this than in palmistry or a study of the lines on the bottom of your feet. The schemes are backed up by expensive and attractive advertising, and the people who give advice based on these plans are very clever indeed; but there is no real science back of their attempts. For thousands of years people have tried "to read the mind's construction in the face," but mental qualities and occupational interests and aptitudes are not so easily discovered. We heard one lecturer settle everything by means of classifying all faces into round, square, and triangular. The only trouble was that two of the noted men whom he used for illustrations failed to follow the kind of life he indicated they should have followed. Furthermore, it is only the very unusual face that can be classified into any definite shape.

All such advertisers and false guides make money because people realize the great importance of choosing their occupations. People in their ignorance do not like to think and study: they prefer to guess, even at the expense of buying some absurd chart based on the stars, sending for a book which promises to solve every problem, or paying a fee. You ought to know, however, after reading this book, that the choice of an occupation is not anything which can be settled in an hour, a day, or a month. It needs study and a series of eliminations and tentative choices through a period of years.

Rechoice may be necessary. Do not be at all discouraged if you find that even an enthusiastic choice turns out to be an unwise one. Naturally enough, rechoices become more and more costly the older you are, particularly when you have the responsibilities of a family. A rechoice will either lower your salary markedly or necessitate expensive preparation. On the other hand, some of the most successful persons have made rechoices and have achieved successful service only in later years. De Morgan, the British novelist, for example, discovered his ability to write, after many years of discouraging experience in contracting and engineering work, only after his sixty-fifth birthday. Apparently it is

never too late to make these changes. We shall discuss in later chapters the advisability of making progress in closely related lines; but sometimes radical changes are necessary, and if you have courage and persistence and are backed up by a life partner who has the same good qualities, you may still make good.

Is the occupation a real service? Probably the most important question to ask yourself is whether you are really serving your fellow men. For in this way alone do you achieve what Roosevelt called the durable satisfactions of life. How can one be satisfied year after year to be in an occupation which is related only to useless luxury or worse? It is obviously impossible to grade the occupations on the basis of service, because practically all of them do perform a valuable service; nevertheless, the accompanying table gives you an opportunity to try, and the trying is itself worth while, provided you do not take the result too seriously. The scheme proposed involves a comparison of the occupation you are considering with the whole world of occupations, on the basis of a number of topics related to the effect of the occupation on social welfare in general and the effect of the occupation on the worker himself. Mark an X or a check in the appropriate column on the scale of points. Thus an occupation which has no improving moral effect on society would be listed zero, whereas that with the best possible effect would be marked in the 10 column. In judging for some of the scores a number of items must be considered, such as the product, the associations you would form among workers and managers, and the effect on society of the institutions or establishments where the work is being carried on. The total score of an occupation will be found by the addition of all the scores.

Choosing a humble or routine occupation. If you will turn to the diagram on page 2, perhaps you may be comforted by seeing that life consists of so much more than merely the vocation. It is only fair to you, therefore, for

	0	1	2	3	4	5	6	7	8	9	10
A. **Effect of occupation on social welfare** . .											
1. Moral effect on society .									X		
2. Effect of product on citizenship									X		
3. Effect of product on public health . . .											X
4. Effect of product on family life . . .											X
5. Effect of product on community life . .											X
6. Necessity of product for human welfare . .										X	
7. Contribution to other occupations . . .							X				
8. Contribution of occupation to progress . .								X			
B. **Effect of occupation on worker**											
1. Moral effect on worker								X			
2. Standard of associates .								X			
3. Effect on civic life . .									X		
4. Effect on physical life .						X					
5. Effect on family life .								X			
6. Standards of income .								X			
7. Standards of thrift . .								X			
8. Effect on mental life .							X				
9. Effect on cultural life .						X					
10. Effect on progress and promotion . . .							X				
Total score 133											

us to acknowledge frankly that many persons are glad to serve in an occupation which does not require much thinking and planning, and would rather work under the direction of others or at a task which is all routine.

Many persons of high intellectual ability use the occupation as a means of earning a livelihood in the easiest possible way, preferring to put their more serious thought on other activities, such as the care of the home, church work, high-class leisure activities, or civic, social, club, fraternal, or political activities. Where would you rather place your highest effort and best service? It does not necessarily have to be in the field of occupations. It is probably true that most people put their hardest thinking into their daily tasks, but it is not by any means necessary that all should. There are many people who devote themselves to other activities and are far more useful than they would be if all or most of their thought were devoted to their vocations.

What to do after choosing. Many people used to think that all would be well after a decision had been made, but this is true only when you make it well. If you feel you have come to a definite decision, then act whole-heartedly on that decision. Give yourself over to a further study of the occupation, get acquainted with fellow workers or future fellow workers, and study something of its internal organization. Do not, however, rush into a job at once or even into vocational preparation. This last point, however, we must consider in the next chapter, on "How to prepare for your Occupation."

EXERCISES AND PROBLEMS

1. Have you ever talked over with your teacher, principal, or parents the question of your occupational future? Tell something about the value of such conferences and how they should be arranged and carried out.

2. Give a statement showing how the library can be of use to one who has the problem of choosing his occupation.

3. Examine Frederick J. Allen's book "A Guide to the Study of Occupations," and tell the class about this book. Bring it with you, and show its various sections and explain how to use it.

4. Give a talk on the subject "How can I best fit myself to make changes in occupational choice several times, if it should become necessary?"

5. We have given, above, a sample table labeled "The Social Measurement of the Occupation of Plumber." Copy this form in your notebooks and work it out for the janitor's calling, or any other occupation selected by the teacher or the class. Bring the results to class for comparison.

6. Make out this "social measurement" for one of the occupations you are considering.

7. Make out this table for the two occupations which you are considering now as first preference and second preference. You may mark X in the proper spaces for the first preference and Y for your second preference.

8. Give a general statement on the question How can occupations with low scores be eliminated or improved?

9. Interview a person of your acquaintance who has made a success in occupational life. Find out from him at what age he chose his occupation and whether or not he changed his mind. Ask him also whether he considered several occupations, and what sources of information he had. Make a report to the class.

10. Show how present conditions and the anticipation of future conditions make it much more difficult to choose an occupation than it used to be. How does this affect the question of deciding on an occupation?

11. Give a talk explaining the difficulties involved in choosing and following an occupation which turns out, when a person is beyond thirty years of age, not to be adapted to his abilities and needs. What effect is this mistake likely to have upon the family life?

12. Give a talk to the class explaining the importance of having a second choice.

13. Is it possible to choose two occupations? Investigate the life about you to see whether anyone of your acquaintance is working in two occupations. Explain the situation to the class.

14. Arrange an interview with another student, on some problem of choice of life work, and give it to the class.

15. Explain to the class the kinds of work which change in summer and winter, and outline the possibility of choosing occupations which fit into each other for seasonal and nonseasonal activity.

16. What is the effect on a man's or woman's life of choosing a work that people refuse to pay for?

17. What is the effect of choosing a calling which requires little or no preparation? Explain carefully, giving instances.

REFERENCES

Ashley, Roscoe Lewis. The Practice of Citizenship (chap. ii). The Macmillan Company, 1922.

Giles, F. M. and I. K. Vocational Civics (chap. i). The Macmillan Company, 1922.

Kilduff, Edward J. How to Choose and Get a Better Job (chaps. i, ii, iii). Harper & Brothers, 1921.

All of the books in the general list at the end of this book give valuable suggestions on choice.

CHAPTER XXI

HOW TO PREPARE FOR YOUR OCCUPATION

When to prepare. In the matter of choice we have advised delay, and the same advice applies to your training. Even after you have decided, you should get as broad an education as possible. On the other hand, there is the risk that you will be caught unprepared, like the boy who dreamed of being a lawyer and suddenly woke up finding he could not continue his education. If you wish to prepare for a learned profession, it is almost a necessity, unless you are in very fortunate circumstances, for you to consider a juvenile occupation as a possible way of earning money before going on with your studies. Why not, therefore, gain experience with a shop or store, to serve as deliveryman or other worker, at least in vacations, and thus be ready to make a worthy living even if it becomes necessary to abandon your ambition? We like to think of boys and girls as able, even if they fall out of high school, to fall right side up, as does a kitten, no matter in what position she is dropped. Learn to fall right side up in the occupational world, so that at least you can earn a living.

There are many levels in the same occupation. The reason for a broad education is that you may thus prepare yourself for service on a high level. We know of one architect who did satisfactory work in his vocation on the basis of architectural study in the high school. Again, a man or woman may study architecture in the first two years of college, and sometimes do acceptable work. Others delay their professional studies until the junior year. Passing to a higher level still, there are architectural schools, like that at Harvard University, open only to college graduates. No previous architectural

study is required. The same levels are apparent in the business schools. There are a few business courses even in junior high schools, other business courses in high schools, business courses in colleges, and graduate schools of business administration. There are many stenographers prepared in high schools, others prepared in colleges, and some who obtain a college education before they go on to stenographic study. Naturally enough, as a general rule those who obtain the widest possible foundation for their vocational studies are best able to give good service.

Now, you must decide your own appropriate level on the basis of your resources and abilities. The study of architecture for college graduates is made far more technical, so far as higher mathematics and science are concerned, than is the high-school study. The same is true of nursing, retail selling, bookkeeping, and all the rest. In addition, the longer education is more expensive, both in the cost of tuition and other expenses during the course and in the lack of salary during training. Adequate compensation, however, usually comes later. There are some who cannot wait, and others who should not wait, but should obtain a vocational education as early as the high-school age.

Consider your own high school first. We hope to see the time come when a broad high-school education can be had by everybody, including languages, literature, music, art, manual arts, gardening, some commercial studies, mathematics, sciences, home economics, and many other studies. But for a vast number of our population, under present circumstances, some vocational training will have to begin during the high-school age. At this age you may combine general education with vocational; that is, broad education with specialized. For example, suppose you are considering farming. Broad studies may be undertaken in the freshman year, including some simple exercises or tryouts in agriculture. You may then proceed, in the second, third, and fourth years, to a greater and greater specialization in the

various phases of agriculture, until in your senior year half of your time is given to actual practice, perhaps on your home farm, and the other half to sciences related to agriculture.

Similarly, machine-shop work may be taken as a tryout course in the first year, whereas the later specialization may include such studies as United States history, civics, economics, machine-shop practice, drawing, science, and mathematics. As a portion of this specialized work a part-time job may be combined with school work.

For the professions it is necessary to make the high-school education broad; for if you do not do so, you may be refused admission to the college or professional school. Find out about the requirements of the professional school you intend to enter, whether as graduate or as undergraduate, and plan your high-school course accordingly.

We advise making the most of your high-school opportunity, because the high school is a broad road leading to a number of opportunities and allowing for changes of mind. We shall discuss other plans which are good, but your own high school deserves your first consideration; do not desert it without the best of reasons,—for example, the advice of the high-school people themselves.

Do not choose the wrong school. If you are the kind of person who believes everything you read, you are quite likely to choose the wrong school. The reason for this is that few of the good schools advertise, whereas the others pay thousands of dollars to obtain your patronage,—money which, of course, they get back from you if you enroll. There are automobile schools, for example, which print the most wonderful stories. There is an old proverb which says, "Everything looks good far away"; and while some of these schools actually are good, yet you had better look more closely about you before you buy your railroad ticket. Some of the schools even pay railway fare; but we are sure they do not pay the return fare of the disappointed failures who are sure to find themselves anxious to leave. In fact, most

of these advertisements are based on the "wonderful successes" of but few people who take the courses. Education is made out to be easy,—something which can be accomplished in one's "spare time,—only fifteen minutes a day." The advertisements offer to make a draftsman or pianist of you in a marvelously short time, and all you need to do, apparently, is to sign on the dotted line. We met one boy who had never finished the eighth grade but had signed a contract to pay $270 for a course labeled "Mechanical Engineering." We asked him how far he had gone, and he answered, "Cube root." Some day the selling of a course labeled "Mechanical Engineering" to anyone who has not already completed algebra and geometry will be classified as obtaining money under false pretenses. For the present, it will everywhere be ruled out by common sense and fairness.

What about "hurry up" education? Eighth-grade graduates sometimes receive glowing circulars from business colleges or other institutions offering a concentrated form of vocational education. What shall we say of these plans? Simply this, that many of them are good and many are bad, and most are quite mediocre. We shall say also that none of them should be allowed to take students under the age of eighteen or twenty-one, because people younger than this are more than likely to fail in any plan of hurry-up education. For adults, especially those who have already had some experience in the occupation, these plans may be good.

EXERCISES AND PROBLEMS

1. Give a statement in class showing the disadvantage of preparing for one's occupation too early, without adequate general education.

2. Give a statement showing the disadvantages which may manifest themselves if one delays his vocational preparation too long.

3. Choose an occupation and show the different levels on which one may work at this calling. Several students may do this exercise, each choosing a different occupation.

4. Give a statement about your high school in its relation to vocational education. Show what opportunities may be utilized even if definite courses are not apparent.

5. Consider the question of part-time work along with schooling. Give instances and definite plans showing how this might be carried out.

6. Why is it that public schools do not advertise as private schools do? Do you think public schools should advertise?

7. Bring to class some of the advertisements of vocational schools, and point out exaggerated statements as well as statements which seem true. Give a general summary showing how to use such advertisements.

8. Prepare an advertisement for your school. All the class may do this exercise, bringing the advertisements for comparison.

9. In the elementary schools of Providence, advertisements of high-school education were posted and studied. The result was that a greatly increased number entered high school. Give a statement showing whether or not your city should follow this plan.

10. If you believe in the Providence plan, bring to class a list of points each of which might be worked up into an advertisement.

11. What do you think of the business colleges in your neighborhood? Do they do good work? How do they select their students?

12. Arrange and give an interview on choosing a vocational course.

DIFFERENT KINDS OF VOCATIONAL SCHOOLS AND COURSES

1. **The full-time school.** First there is the school, such as the high school, to which you go for all or most of the working-day. The commercial course in the high school and the agricultural high school are examples. You do some practical work, but you do not get pay for it, because it is largely on an exercise basis and gives you an all-round preparation for the occupation. When you leave the school and enter the occupation, you have some difficulty in making your first adjustments, an increased speed in working being universally required. Speed is not very difficult to acquire, however, if

your employer is patient with you. The full-time school, particularly the trade school, has an important place for those who can afford it, and will usually allow a combination of general and vocational education such as we have described above. It is particularly useful for preparing for the job of homemaker, and is probably more useful for the commercial course than for the mechanical trades.

The professional schools also are usually full-time schools. This is true of business schools, engineering schools, law schools, teachers' colleges, and medical and dental colleges. Usually they have some form of laboratory practice in connection with the work, and are sometimes followed, as in the case of hospital practice, by a kind of student-worker position, in which you take the first steps in your future occupation under careful supervision, with some pay.

2. **Part-time courses.** A most interesting plan, worked out extensively by Dean Schneider of the University of Cincinnati, is called the part-time coöperative plan. This involves alternative periods of work and study, two boys or girls holding the same job. Thus a student of engineering may in his freshman year have two weeks of work in a machine shop, at the end of which time he exchanges places with a student who has been studying in the college, and takes up two weeks of engineering studies. At the end of that period he reports again to the shop. The student engineer in his freshman year may obtain experience in assembling and bench work; in the sophomore year, in high-class lathe work and toolmaking; and in the junior and senior years, in engineering practice. The work at Cincinnati has recently been broadened to include the work in business administration as well. In the first year some of the lower positions in business are filled, following which, in the sophomore, junior, and senior years, as in the engineering school, higher positions are obtained. In this way the whole scope of business from clerk to manager may be studied, with practical experience at the same time.

Antioch College, at Yellow Springs, Ohio, has recently organized an extensive plan of part-time college education, with particular attention to the man or woman who is likely to open a small shop or business establishment.

Many high schools have adopted this part-time plan, in which two boys, usually changing each week, alternate between work and study. The plan has the advantage of combining theory and practice in a way which is impossible in the full-time high school. It has some disadvantages, but is decidedly worth considering for those who feel that they have definitely decided on their occupation. The scheme is extensively used in high schools in connection with salesmanship in stores, particularly department stores. In 1922 forty cities were reported to be operating schemes for studying and selling under various part-time plans. This is exclusive of pupils in continuation schools.

3. **The continuation school.** The continuation school represents another part-time plan,—one which requires usually less than half time, though it may grow into the half-time scheme later, as it already has in the state of Wisconsin. Many states require those who work between the ages of fourteen and eighteen to attend school in the daytime at least four to eight hours per week. Those who have a job as errand boy should go to a continuation school largely given over to vocational tryouts, to the study of occupations, and to the continuation of broader education.

4. **Evening schools.** The chief thing to remember about the evening school is that it is for adults. Furthermore, it is very difficult to prepare for a new vocation in the evening hours.

When you have reached eighteen years of age, if you are exceptionally persistent and full of energy, or if you have reached twenty-one and have average ability, you would profit from evening-school courses, particularly if they are related to the work of your job. Thus one who works as stenographer during the daytime can gain speed or a wider

vocabulary by evening work. An auto mechanic can learn the theory of the automobile plus drawing and mathematics, a draftsman can study machine-drawing or architecture, and a homemaker can study millinery or dressmaking.

Wonderful progress is being made in evening-school work; and by the time you who read this book are at work, you should certainly investigate the opportunities offered in your night schools. Progress is being made toward giving short, definite units, so that if you are a carpenter you could learn in ten lessons to read blue prints such as you need in your trade. The main thing to remember in enrolling in evening courses is to study carefully just what you are doing before you sign up. Unfortunately, most evening schools neglect the matter of educational and vocational guidance, with the result that many persons enroll for courses they should never enter and consequently either fail or get nothing from them. Carefully selected evening-school courses are usually your best preparation for promotion and for other vocational adjustments.

5. **Correspondence schools.** Correspondence courses too are often of great value for adults. If you are unusually persistent in your ability to stick to a task late at night, with no encouragement and without the stimulus of fellow learners or the personal help of a teacher, you may get great help from this kind of work. Some of the correspondence schools have obtained the best teachers in America for writing their courses, and such books are among the best possible, since you obtain the advantages you might have if you went to the best schools or universities. But the fact remains that it is almost wholly "up to you" what advantage you take of the correspondence work. We have spoken above of the kind of correspondence-school advertisements which make it all seem an easy task. Some of them show a picture of the boss laying his hand on a man's shoulder and saying, "You get the job," whereupon the man rushes home and tells his wife about it. This dramatic incident perhaps really hap-

pens to a few, but most of the real incidents are concerned with "midnight oil" and with patient waiting for the next letter with all its corrections and its suggestions for your work, some of which you understand and some of which you do not.

Wait till you are a voter before you sign up for a correspondence course; and whether twenty-one, twenty-five, thirty, or sixty years of age, thoroughly consider four questions: (1) Is this just exactly the kind of course I need? (2) Is it the kind of course for which I am adapted, so that I have a good chance to succeed? (3) Have I the persistence and late-evening energy to carry the work to a successful conclusion? (4) Is it a school which has a reputation for honest advertising and high-class work?

6. **Factory and store schools.** Again, a number of business and industrial establishments themselves maintain schools where their employees are offered many splendid opportunities for study. Most big stores nowadays maintain an educational department, and one who wishes to increase his power of service ought to take advantage in every way possible of these opportunities. Factory schools teach workmen drawing, science, and mathematics connected with their jobs, and sometimes even broader studies. Occasionally a progressive establishment will advise a man in connection with correspondence courses, and sometimes even pay his tuition.

In any case, it is decidedly to your advantage to find out from your employer, if he is interested in your advancement, his ideas about advanced study, and thus to coöperate with him in whatever courses you take.

7. **Apprenticeship.** We hear a great deal about the old-fashioned apprenticeship systems, but these were largely for owners rather than for workers, and were used as often to restrict opportunity as to give it. Nowadays, however, apprenticeship is being widely revived, and it is decidedly worth your while to investigate it before choosing the preparation you desire.

In some apprenticeship plans the company agrees to take you for from two to five years, teaching you all phases of the work and giving you studies at the same time, the object being to fit you for promotion to a foremanship or other higher position. Other plans, as developed specially in Wisconsin, apply to younger boys and girls, especially to those from sixteen to twenty-one years of age. In these schemes an agreement is signed by the State Industrial Commission, the young person, the parents, and the employer, in which it is agreed that the apprentice shall be taught, say in carpentry, all such phases of the trade as framing, roofing, flooring, inside finish, stair-building, etc. In addition, he shall be allowed time during working-hours to attend continuation school from four to eight hours a week. Here he will be taught such subjects as mathematics, blue-print reading, drawing, science, civics, and such other studies as are necessary to the trade and to good citizenship.

Other plans of apprenticeship are carried on under the direction of the union, and in some cases the academic work required is given in schools managed by the unions.

8. **Other plans for education.** There are many other plans for increasing your vocational efficiency, especially after you have begun work. University extension is one, the labor-union-college movement is another. Extension courses are offered either by mail or in classes, usually in very convenient short units and in a wide variety of topics related to skill, technical knowledge, and social understanding. The labor-union colleges have not yet developed much technical work, but rather are concerned with social understanding of work, as represented by such courses as economics, sociology, etc., and also with broadening studies related to history, literature, music, and art.

Whether or not effective vocational education can be given by newspapers, magazines, or radio remains to be seen. Most attempts so far have been so diluted as to be quite ineffective. Perhaps the reason is that, after all, the student himself is the one who has to do the learning.

EXERCISES AND PROBLEMS

1. What are the advantages of the full-time vocational schools?

2. Give the advantages and disadvantages of the part-time school or courses as described above.

3. Two of you may choose opposite sides of the question *Resolved*, That full-time vocational training (or part-time) is the preferable plan. It would no doubt be better to make the question definite by adding "for the occupation of ———."

4. What do you think of the part-time idea for a college for all the usual studies, as carried on by Antioch College?

5. Show the advantage of continuation school and the disadvantage of making a sudden break between school and work.

6. Can you interview a teacher of an evening school and find out what he thinks about young boys and girls in evening-school classes?

7. Show the advantage of short-unit courses in the evening school; for instance, a course to teach how to make spring hats.

8. What kind of personal qualities are needed for success in correspondence-school work?

9. Investigate some of the opportunities in correspondence-school work for experienced workers and show how these are being taken advantage of.

10. Is there a university-extension department in your state? If so, find out about its courses and report to the class.

11. Is there a store school or factory school in your neighborhood? If so, visit it and report.

12. Demonstrate the learning and teaching process in a vocational task.

OTHER PHASES OF PREPARATION

Learning on the job. Slack seasons, and even such disturbances as temporary unemployment or strikes, offer good opportunities for study. A quick journey to the library on Monday morning, instead of a lazy time about the house, will open up new fields of interest for you and aid you to make the progress such energy deserves. There is much sound advice in the plan to study ahead and to keep your

eye on positions above you. Mr. Frank Gilbreth, the industrial engineer, has developed what he calls the three-position plan—the plan of teaching those behind you to take your place, of studying your own job, and of studying the job ahead.

Three phases of your preparation. There are three important items in your vocational preparation: skill, technical knowledge, and ideals or social understanding about the job.

Skill is related to what you do in the job, such as the actual turning of wheels and moving of materials, or the things you say and the other activities you carry on. Clearly you need careful training to do these things correctly.

You also need to understand the *reasons* for every one of your actions. This is technical knowledge. Thus, the plumber who is doing a job of soldering ought to know, through his study of science, just how the solder works. The stenographer needs to know about business organization, and the nurse about hygiene and the science of handling patients. The teacher must understand education and sociology as well as have actual skill in the classroom. This knowledge is called the technique of the occupation, and is usually expressed in science, mathematics, drawing, or other studies which explain the reasons back of your actions. A person without technique acts on what we call rule of thumb; that is, he merely does things with his fingers without knowing why he does them. Science develops the kind of worker who can meet new situations and solve new problems.

Finally, ideals and social understanding about your occupation are needed. An auto mechanic must know something about how to treat fairly fellow workers, employer, and customers and also how to develop the necessary tact in getting on with people. The physician must have the right ideals. The bookkeeper must learn how to keep confidential knowledge to himself. In other words, there is a definite set of ethical principles or important ideals connected with every

vocation. Of course, you need ideals connected with citizenship, home life, religion, and the rest, but there is also a body of ideals to be developed for your job. In Chapter VI we have discussed ethical principles which relate to all occupations. These must be supplemented by the particular ethics connected with your own work. We have described one or two such statements of vocational ethics in Chapter VI.

One of the most difficult problems in all your preparation will be securing education in all three of these branches: skill, technique, and ideals. If you fail in any one, you can hardly succeed in the occupation. Many schools, we regret to say, are very strong in technique but give almost no practice in developing skill. Some schools, on the contrary, are devoted almost wholly to skill; as, for example, a school which advertises teaching its trade with tools instead of books. This is all very well; but it happens that there are many principles connected with that trade which cannot possibly be learned without books, or at least without teachers who give textbook material. All three of these things—skill, technical knowledge, and ideals—are important, and you should neglect none of them.

Substitutes for vocational education. It is one of the money-making schemes of the false guide to persuade you that various substitutes are "just as good" as vocational training. One advertisement offers a book which will be sent free, and which may be kept five days and returned without cost if you do not like it. This book describes how you can train yourself to be the boss of all your associates. This is a very selfish viewpoint, isn't it? It is, of course, exactly the plan of every self-seeker. According to the advertisement, the mere reading of this book and acting on its advice will enable you to surmount all obstacles and to make yourself master. No such short cut can take the place of hard work; and no matter what magazines accept these advertisements, such tales are false. Occupational success comes by study and coöperation, not by bossing.

We have already discussed somewhat the "hurry up" forms of education. These too are offered you as substitutes in place of a real vocational education. One book is advertised under the caption "How I raised my earnings from $30 to $1000 a week." Another tells about the case of a man who was "seven years a failure" and then achieved "sudden success." An advertised course is said to have taken one man "from blacksmith to city attorney." If you were offered a substitute in a drug store, you would read the label very carefully, find out all about it from the druggist, and perhaps get the advice of a well-informed person who was not concerned in the selling of the article. It is fully as dangerous to poison the mind as to poison the body, and you cannot be too careful in considering these educational substitutes.

Make the education broad. Do not make your vocational education too narrow, and this for two reasons: (1) you have much more in life than your occupation, and (2) you may change your mind. Of course, the vocational education will be of little use unless it is very definite and unless it offers you real marketable skill and ability. It can do these things, however, and at the same time give attention to some of the related knowledge which concerns similar callings or other activities. In this case, if it turns out that you do not stay very long in the occupation, or if you advance to a position just above, or decide to come down to one below, or if you change your mind completely and go into an entirely new field, you will still have some satisfaction in knowing that your vocational education was useful.

This, by the way, is the chief advantage of such broad occupations as those of teacher, nurse, stenographer, contractor, farmer, retail dealer, etc. The girl who goes from nursing or teaching into wifehood or motherhood is partly prepared, through the occupation she has followed, for the new job she undertakes. The retail dealer who becomes a banker looks with more understanding upon the world of

business men with whom the bank deals. Just so, the vocational education should be so broad that it teaches one to think of other workers. If it is a course to make you a plumber, for example, you should consider somewhere some of the problems connected with the work of the electrician, carpenter, machinist, bricklayer, draftsman, etc.

Can your preparation be complete? We warned you at the beginning of this chapter to delay your vocational preparation, and we repeat that warning here. To the question When does your vocational education end? we unequivocally answer, Never. Perhaps your full-time preparation ought to end rather soon, particularly if you can find a part-time opportunity. But no person in any occupation should assert that he has reached the absolute end of his training. If he is a longshoreman, the engineer can still teach him how to handle his truck and how to lift without undue exertion. If he is a bricklayer, he can learn more economical ways of handling brick, mortar, staging, etc. If he is a carpenter, he can learn new things about woods, modern inventions, and contrivances, as set forth in the trade journals.

These trade journals are perhaps your chief source for continuing your education, but we shall have to discuss the full possibilities in this line in a later chapter. We shall now turn to some questions connected with the economics of occupational life and shall later offer some suggestions about marketing the skill which you have developed.

This chapter, however, if you are still in school, is not for you to act upon now, but rather to consider as showing the problems you will sometime have to face. If you have studied the geography of the British Isles in the fifth grade, even if you have forgotten most of it, you will be in a better position to study it again if, at the age of thirty, you are taking a trip to England. Thus you may forget many of these things we have said, but your serious consideration of them now will make the problem of preparation easier for you to solve when the proper time comes.

EXERCISES AND PROBLEMS

1. Is there an apprenticeship plan which you can investigate and report upon? Perhaps some boys or girls who left school are apprentices. Be careful to find out whether they are really apprentices or are so in name only.

2. Interview an intelligent high-class worker to find out what methods he used while on the job to learn about his work. See whether he reads books and magazines about his work.

3. Investigate opportunities in the library for securing a large number of technical books on an occupation. Report what you find out to the class.

4. Give instances showing how all workers need skill, technical knowledge, and ideals in their work.

5. Is there any such thing as "hurry up" vocational education; that is, can one get an all-round training in a very brief time?

6. Give instances to show what might happen to a person who has made his vocational education too narrow. Different members of the class may choose important instances, such as the case of the architect, nurse, teacher, doctor, clergyman, chemist, aviator, auto mechanic, stenographer, bookkeeper, tailor, farmer.

7. Give a statement showing something of your own plans for vocational education, remembering that all such plans are subject to change.

8. Interview a fellow student and show how he is solving the problem of preparing for an occupation. Give the interview in class.

REFERENCES

Ashley, Roscoe Lewis. The Practice of Citizenship (chap. ii). The Macmillan Company, 1922.

Secure catalogues from schools you are considering.

All the books listed in Chapters IX to XIX inclusive discuss the question of preparation.

CHAPTER XXII

VOCATIONAL ECONOMICS

EMPLOYERS AND EMPLOYEES

Employers must pay wages. How should you like to take a contract to grade a yard, filling up the holes and cutting down the high places, covering the lot with good loam, and putting in a lawn? You have not yet hired the men, and you do not know how fast they will work. You have to place the bid low enough to compete with other contractors, and you have to provide tools, horses, and wagons to do the necessary digging and hauling. Every Saturday night, absolutely without fail, you must have money enough to pay the workers, for you could be forced out of business if you should fail to pay them.

This is the problem of the employer. He must sell his goods or services at such a figure as to be able to pay all his expenses. The payment of some of these expenses can be postponed, but employees must be paid weekly. We shall later discuss other problems of the employer, but this duty to pay wages is his first and most important one.

Employees must live. Most employees in the United States today are dependent upon their wages for their daily bread. Either wages are too near the cost of living or workers have not learned thrift sufficiently to accumulate a surplus. The coal-miners once named unemployment as a reason for striking, and asserted that they would not go back to work unless they were guaranteed at least five days' work in every week. If employees must live, they must work,—that is, they must produce,—and if employers are to pay them, the workers must produce enough so that sales will

allow sufficient return. As the National City Bank Bulletin recently stated, "Prices to consumers will have to be high enough to pay all the factors in production or production will fall off."

Sources of expense. Five items of expense, among others, must be provided for: interest on the capital invested, upkeep of plant, salaries for managers, cost of material, and wages for laborers. Unless all of these things are forthcoming, no business or industry can possibly succeed. We have described in Chapter IV how the men who are able to collect a surplus invest it in business or industrial establishments. The United States Postal Savings Bank would give them 2 per cent, the ordinary savings bank 4 per cent, and some banks as much as 5, and these investments would be practically certain of return. If a man is to invest in a business where there is some risk involved, he naturally expects 6 or 8 per cent and higher. Of course, it is quite true that while we cannot have labor without laborers or management without managers, we can have capital without capitalists in control. The Panama Canal was dug and our schools are run with large amounts of wealth or capital without any capitalists in charge. The managers or the laborers themselves may furnish capital, or the city or nation or group of managers may borrow it from capitalists, guaranteeing them security and an adequate return. Most enterprises, however, at least for a long time to come, will probably have stockholders representing capitalists, who furnish necessary money to get enterprises started and to keep them going. Thus no possible return can come without the production of goods or services which can be marketed in such a manner as to bring in necessary return to some form of capital. We shall turn, therefore, to a discussion of what production is. First we shall see that the producer is one who renders services for which he can be paid, next we shall analyze the cost of goods, and then proceed to the problems of improved methods of vocational life.

PRODUCTION AND DISTRIBUTION

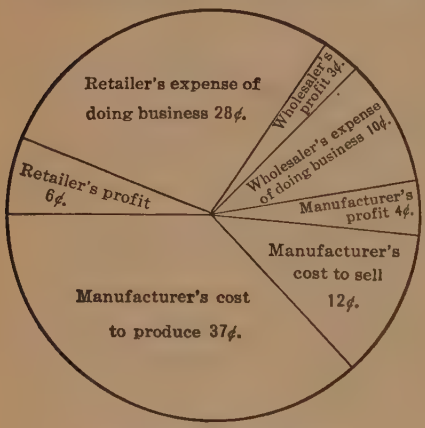
Production. What is the difference between productive labor and unproductive? Suppose two rooms are occupied by two groups of men. In one room four men, each with $25, are seated at a table gambling. During the day there is considerable changing of money and at the end one man has all the money. In the other room four men are seated at a table upon which is piled a large amount of raw material, let us say reeds and twigs for the making of baskets. This material is valued at $100, which is exactly the total amount in the hands of the four men in the other room. The four men in the second room busy themselves with making the raw material into attractive and marketable baskets. Now what is the total wealth in the first room at the end of the day, and the wealth in the second room? Let us say that in both rooms certain tools are used, clothing is somewhat worn out, and food is consumed. Is it not quite obvious that nothing whatever has been produced in the first room, since the total wealth in the group is exactly the same no matter how many times it may have changed hands, whereas in the second room wealth has been produced in the transformation of the raw material into baskets?

This illustration shows exactly what we mean by production as against gambling or idleness. Precious metals are mined, crops grown, raw material transformed, goods moved or arranged, accounts kept, articles improved, or other methods taken to furnish the goods and services which humanity requires.

Distribution. Distribution is usually contrasted with production, although it no doubt produces services which are useful to mankind. It is better called *indirect production*. Certainly the transferring of material from one place to another is an important and necessary service.

The chief agencies of distribution are, of course, the transportation companies and the wholesale and retail stores.

The purpose of a store is to accumulate enough goods to satisfy the needs of its customers, and at the same time to keep its stock low enough so that not too much money is invested in the business. The faster the goods can be moved the better for the business, provided, of course, customers are not disappointed by finding gaps in the supply. A study by the Bureau of Business Research of the Graduate School of Business Administration of Harvard University shows that for grocery stores the average stock-turn in 1919 was 8.3 times a year. This means that the total volume of sales was over eight times as much as the value of the goods in stock at any one time. For the retail shoe business a common figure was 1.8 times, drugs 2.3 times, hardware 2.1, and jewelry 1.1. One grocery store was found which turned its stock over 29 times a year, and another one only once in every two years.


Retailer's expense of doing business 28¢.
Wholesaler's profit 3¢.
Wholesaler's expense of doing business 10¢.
Retailer's profit 6¢.
Manufacturer's profit 4¢.
Manufacturer's cost to sell 12¢.
Manufacturer's cost to produce 37¢.

WHAT YOUR DOLLAR BUYS

Where the consumer's dollar goes, as shown by an inquiry following through to the consumer the products of 40 staple and specialty manufacturers in various leading branches of trade. (Ingersoll, in *National Civic Federation Review*, June 30, 1919)

Naturally there is a great deal of competition in distribution, and this competition is probably more costly to the customer than competition for production. The accompanying diagram shows where the consumer's dollar goes, and indicates that the actual production of a dollar's worth of merchandise which you buy at the retail store costs the manufacturer only thirty-seven cents. Such figures have led

to a great deal of controversy and misunderstanding. It illustrates the plain fact that distribution is at present more expensive than manufacture. If we add the manufacturer's profit to his production cost in this diagram, it then leaves fifty-nine cents as the cost of distribution, including the manufacturer's selling cost. If we could buy the actual goods at the manufacturer's door for forty-one cents, no doubt we should feel very well satisfied, but as a matter of fact we demand neighborhood stores and we want a large retail district with all sorts of stores selling a great variety of goods for us to choose from.

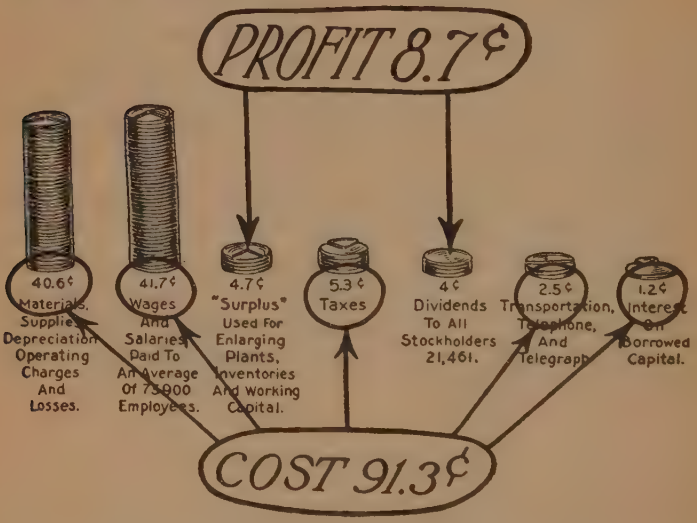
The coöperative movement perhaps can lower distribution costs, and ways may yet be discovered of minimizing the work of the wholesaler, or middleman as he is sometimes called. It is, nevertheless, quite true at present that this link in the chain of distribution is necessary, and the expense is quite justifiable. You of the next generation may be able to make a better solution.

FIGURING THE COSTS

The costs of carrying on productive enterprises are often classified under three heads: costs of material, costs of labor, and overhead expense. The cost of material represents labor in a great many cases, since gathering the flax, linen, cotton, wool, aluminum, iron, sand, or what not is largely a matter of human labor. Cost of material is what the manufacturer pays to get the raw material to the door of his factory. In an average of many kinds of production this may be said to represent roughly one third of the cost of production, though it varies from one fifth to one half. Another third is represented by the cost of the labor to manufacture the raw material into finished products. The last third is usually designated as "overhead costs," and represents a number of items which will appear in our tabulations below. Roughly, it includes the interest on the money invested and the cost

of those forms of supervision or clerical help which do not actually go into the articles produced except in an indirect way. Rent also is included under overhead charges.

Let us now analyze some of the costs as actually given in statistical investigations.


PROFIT 8.7¢
40.6¢ Materials, Supplies, Depreciation, Operating Charges And Losses.
41.7¢ Wages And Salaries Paid To An Average Of 73,000 Employees.
4.7¢ "Surplus" Used For Enlarging Plants, Inventories And Working Capital.
5.3¢ Taxes
4¢ Dividends To All Stockholders 21,461.
2.5¢ Transportation, Telephone, And Telegraph
1.2¢ Interest On Borrowed Capital.
COST 91.3¢

HOW THE MANUFACTURER DIVIDES EACH DOLLAR

Distribution of each dollar of income of a large industrial concern (three years, 1918–1920). (Courtesy of the General Electric Company)

The costs of electrical manufacture. The General Electric Company figures costs as shown in the accompanying diagram. It will be noticed that the income to stockholders is smaller than the share the government took in taxes. This indicates how in our productive enterprises the government finds support. Suppose we multiply all the figures in the diagram by ten. Then we should find that the cost of doing $10 worth of business represents $4.17 for labor, 53 cents for taxes, 47 cents for surplus investment in the business, and 40 cents cash dividends to stockholders. This means that for

every $4.17 paid to a worker the company receives 40 cents on the capital stock invested. Thus labor receives over ten times as much as capital.

The cost of transportation. The Boston Elevated Railway Co. in justification for its ten-cent fare in March, 1922, published the following table:

THE COST OF A RIDE ON A STREET RAILWAY

	CENTS
Labor [including salaries of officials]	4.63
Taxes	.51
Materials	.94
Accidents	.16
Depreciation	.59
Coal	.49
Rental of surface cars	.81
Rental of subways	.59
Interest	.46
Dividends	.46
Surplus	.36

You will note that every person riding on this system pays each time for a half cent's worth of coal.

In 1921 the average dollar of railroad incomes for all the railroads of the country was disbursed as shown in the following table:

SPENDING THE RAILROAD DOLLAR

	CENTS
Labor (salaries and wages)	46.9
Materials, supplies and miscellaneous	20.6
Fuel	9.5
Taxes	5.0
Loss, damage, injuries, and insurance	2.9
Depreciation and retirements	2.8
Hire of equipment and rents	1.4
Total expenses	89.1
Net operating income (available for interest and for dividends)	10.9
	100.0

The table on page 372 shows where the 1920 transportation dollar came from.

WHERE THE RAILROAD DOLLAR COMES FROM

	CENTS
Transportation of freight	71.71
Transportation of passengers	16.98
Transportation of mail	1.69
Transportation of express	1.53
Freight demurrage, storage, etc.	0.49
Switching-service	0.85
Parlor cars, excess baggage, etc.	0.56
Hotel, restaurant, dining-cars, etc.	0.58
Station privileges, train privileges, etc.	0.32
Rents of equipment, road, buildings, etc.	2.79
Income from investments	2.50
	100.00

An accounting of the costs of motor-truck transportation between Akron and Cleveland for a fleet of eighteen trucks in one year's operation—a total of 2154 trips—is given as follows in the magazine *Factory*:

MOTOR-TRUCK TRANSPORTATION COSTS

	CENTS
Tires	4.74
Driver's labor	2.67
Maintenance (labor and material)	2.41
Depreciation of trucks	2.17
Gasoline	1.98
Oil	.44
Interest	.38
Rental	.19
Insurance	.04
Miscellaneous	.04
Cost of one ton-mile	15.06

Profit, surplus, and debts. Profit may be regarded as including not only extra interest for risk assumed but also a fee or salary to the owner of the business; for financial organizing-ability is entitled to compensation, just as is ability to organize industrial corporations into efficient producing units. Are the owners entitled to salaries, in addition to interest, when they are absent from the business?

Again, the men in charge of the financial affairs of a corporation need to provide for surplus and for depreciation and for assigning funds to pay the bonds and other debts of the establishment. In 1920 and 1921, due to a severe financial depression, many factories suffered from lack of business. One factory had prepared itself for just such an emergency by maintaining a surplus of over $2,000,000 on September 1, 1921. A year later this surplus had been reduced to $462,000, showing that without the surplus the business might have been forced into bankruptcy, since borrowing is difficult in hard times. When business was good in 1920, prices were high, but the depression forced this company to revalue its inventory of rubber goods at a figure which was only half the original valuation.

If a company borrows money from banks or individuals, it usually issues promissory notes which are called bonds. The gradual payment of these bonds must, of course, be provided for. There must also be provision for repairs and for the gradual wearing out and consequent replacement of factory machines and other equipment.

EXERCISES AND PROBLEMS

1. Can you interview an employer and find out something about his responsibility for paying wages?

2. Discuss the question of thrift for employees. Describe some industrial or commercial enterprises in which the cost of material is very high in proportion to that in other factories. See whether you can find out what precautions are taken to avoid wastes and to keep these costs as low as possible.

3. Can you mention some industries in which the cost of labor is very high in comparison with the cost of material?

4. Can you mention any ways which are distinctly nonproductive in which people occupy their working-time? Do you think it would be a good thing to prohibit such occupations, or at least to require that persons engaged in them should pay for nonproductive periods by some form of productive labor?

5. Can you find out from a retail store how often the stock of goods is turned over every year? Ask the merchant whether it is better for business to have large sales with a little profit on each sale or to have slow sales and large profits.

6. Refer to Exercise 5 and discuss the question Which is better for the consumer?

7. Were you surprised to find out that the cost of manufacture is less than half the price of goods? Explain the reason for this condition of affairs.

8. Do you understand what we mean by "overhead"? Explain some of the items which come under that classification.

9. Refer to the table above, "The Cost of a Ride on a Street Railway." Which of these items is classified under overhead? Can you discuss this table, explaining each item?

10. Look at the table labeled "Spending the Railroad Dollar." How can passengers on roads or shippers of freight help to save money?

11. Give a statement analyzing and explaining the table above labeled "Motor-Truck Transportation Costs."

12. Explain what would happen to a company if it provided for no profit. Would it be able to secure necessary capital? What other difficulties might it have?

13. Explain what might happen to a company which did not carry any surplus.

14. What might happen in case a factory or a store did not provide for depreciation of equipment? Give instances.

ECONOMIC CHANGES PROPOSED

1. **Reducing the costs.** An improvement for which many intelligent men are working is the reduction of costs. Let us consider advertising, for example. In seventy-two publications in the year 1919 over $97,000,000 worth of advertising was published. This is in addition to newspaper, billboard, and other forms of advertising. Is this the most economical way for us to find out what we need to buy and where we can find it? Is advertising for the purpose of informing us,—announcing to us what is available in case of our need,

—or is it for the purpose of inducing us to buy what we do not want and do not need? Why is advertising needed?

You know, of course, that this advertising comes out of the pockets of those who buy. If we buy an automobile

"HE THINKS HE BUYS AN AUTOMOBILE"

Copied from a magazine cartoon

we help to pay for the billboard advertising which tells us all about it. We are unable to buy either chewing-gum or clothes or breakfast food without paying from two to five cents on the dollar for advertising-purposes. A cigarette company advertised that on a certain day anyone who wished might go into any cigar store and ask for a free sample of a

cigarette. This, of course, must be paid for both by those who smoke and by those who do not, through the withdrawal of money, salesmen, and cigarette-makers from other, more productive, avenues of effort. In the Seattle Automobile Show of 1920 an automobile made entirely of sugar was exhibited. Such an exhibit costs money. Who pays the bills?

This problem of reducing the cost of getting an article from the producer to the consumer is so baffling and difficult, and yet so important for you to grapple with, that we had best give you some other illustrations.

The cost of mere cartage is so great that the Census Bureau, in a preliminary survey, found that 12 per cent of the cost of milk and 19 per cent of the cost of wood and coal are due to city delivery. In one American city it was found that the milk wagons on a morning delivery covered a distance eleven times as great as the total length of the city streets. In a city apartment house of six families, five different milk wagons, representing five different companies, stopped and delivered milk, each man coming to the rear of the house and two of them climbing to the third story. "The primary purpose of the industries is to supply the daily needs of the population," says Mr. Roberts, and clearly the needs of the population can be supplied more economically than by the duplication of effort represented by so many different companies. Is it necessary to have so many small stores, particularly when there are five or six stores of the same kind in the same neighborhood? An expert testifying before a Senate committee gave it as his opinion that there are two or three times as many people engaged in the retail business as should be. The public, he stated, is paying two or three times as many people to serve it as are necessary. He stated also that there are five times as many people making a living out of the retail shoe business as are necessary in order to serve the public. Each of the thousands of separate shoe factories has its staff of salespersons, many of whom travel all over the United States, and any one of these retail stores may be visited by scores of salesmen representing the wholesale houses and the factories. There are ten or a dozen department stores in every big American city, and each of these stores separately sends its buyers to New York and Paris. For all of this duplication we pay. But we also get a rivalry which is healthy and necessary, though it is possible that even with competition there may be many ways of saving.

Another way in which costs mount is through expensive packages, magnificent furnishings, and palatial buildings. When you ride on the Pennsylvania Railroad, you help pay for the Pennsylvania Station. Is it the kind of station you want, or would you rather have a simpler one, at a lower cost? You enjoy the splendid fixtures of a bank, but you should remember that you have helped to pay for them. One who buys a pound of candy in a very fancy box pays, of course, for something more than candy. Goods done up in gilt paper and sealing-wax must be paid for some way, and the man who sells them, if he is making a success of his business, must charge the buyer enough to pay for this expense.

2. **Taxation reform.** Another proposed change relates to taxation. The theory is that land of all sorts should be taxed more, and improvements, houses, factories, and business taxed less. The first man who proposed this plan called it the single tax, because he thought that a tax on land could be used to take the place of all other taxes. Few people believe this now. In combination with the income tax and the inheritance tax, however, this theory has lately found more favor, and many economists believe that building and improvements would be stimulated and the use of land would be increased through a modified form of the land tax. Some places are experimenting with the plan, and we shall know before long whether it will help.

3. **Government ownership and supervision.** Whether or not we should prosper more under government ownership is a very much-disputed question. The socialists say Yes, and would take over, not all private property, but all such property as is utilized for producing and distributing things used by a large number of people. They would begin with railroads and mines and proceed to stores and factories. Other citizens violently oppose any such notion, and even assert, as did recently a Boston paper, that we should be very much better off if we turned over the post office to a big corporation. No one has yet proposed turning over our schools to a gigantic private company to run on a contract basis.

Whatever may be our future decision on this question of government ownership, it is interesting to mention the things we have already taken over. Our cities, for example, run libraries, hospitals, schools, and parks. We supply the citizens, under government ownership, with water, sewer service, and sometimes with electricity and gas. We collect our own taxes and assess our own property. Usually we have a street department to clean our cities, and a construction department to pave them, though this work is frequently let out on contract. We handle garbage under a city-ownership plan. We have city courts and conduct our own elections. Protection from fire and crime is not bought by us from private companies, but we organize a fire department and police department. We run our own prisons and almshouses and sometimes our cemeteries. We hire city doctors for our health department. We have government-owned and government-managed bathhouses, recreation piers, museums, art galleries, aquariums, and gymnasiums. We frequently run our own printing department, and we care for our public buildings with our own janitor service. We own and manage bridges and sometimes ferries. Furthermore, in many cases where we do not actually own and manage we supervise such things as the erection of buildings, the licensing of peddlers and other workers, the correctness of weights and measures, the honesty of retail dealers, and the renting of houses. Our states have taken over highways so extensively that toll roads are almost unknown.

The state may not own so many things as the average city, but it supervises more. It too owns and manages its prisons, almshouses, and educational system (of which the city-school systems are legally a part), and sets up such important schools of its own as normal schools, colleges, teachers' colleges, schools of mines, agricultural and home-economics colleges, textile schools, nautical schools, etc. The state has also its state library and sometimes its own park system.

The United States government does not contract for the coinage of its money, but has its own mint and engraving department. Under the Federal government, we supervise many of our activities, just as does the state government. We conduct research in agriculture, commerce, labor, public health, aviation, and in many other departments, and we run our own army, navy, and post office. We have also our lighthouses, life-saving service, hospitals, and government printing office, and carry on many other activities. We organize an extensive irrigation program, a patent and copyright protection, a standardization of weights and measures, a weather bureau to serve all our citizens, and a consular service for manufacturers and other business men, with information about markets.

Whether or not all these things should be extended or curtailed is for you to answer. Probably different groups of our citizens will always disagree on this question. It is the old question which arose long before the Civil War—that of centralization or decentralization. It is no doubt futile to take an extreme position in either direction. What is more sensible is to decide just how intelligent we are at the present time in Congress, Cabinet, state legislature, and city council, and to decide whether or not this collective intelligence is sufficient to warrant further government ownership and control. Possible substitutes for government ownership have been indicated in earlier chapters under our description of the coöperative movement. The organization in Cleveland of the Coöperative National Bank of the Brotherhood of Locomotive Engineers is an indication of the way in which large groups of men may organize, parallel with the government, coöperative plans which may prove superior to government ownership. Eight other banks sponsored by labor organizations are now under way, and fourteen or fifteen more are in the process of organization. In New York City, groups of persons have combined to buy, own, and manage the apartment houses in which they live as tenants. These

experiments, like those described in Chapter IV, indicate another direction in which we are tending.

Meanwhile we can study the costs of production under each of these three plans of production and distribution which go on simultaneously—private enterprise, coöperative associations, and government ownership.

Some persons have proposed to do away entirely with all political government and to build up an organization of workers instead. This, of course, resembles the Soviet plan in Russia. The clothing workers, electrical workers, railway workers, teachers, dentists, and every other group would elect their representatives to a central council of workers; and this council representing workers would constitute all the government we should have. An interesting hint is found in the agricultural bloc now unofficially existing in Congress. The industrial-government idea has found scant favor in America, because we are justly devoted to our present Constitution and propose to work out our salvation by progressive changes under substantially the present form of government.

What do the two parties say? Both the present parties are against many of these changes outlined above. The Democratic party is supposed to stand for decentralization, and the Republican for a greater measure of government supervision. They are very much alike, however, in their devotion to a slow process of change and a loyalty to constitutional government as it is at the present time.

EXERCISES AND PROBLEMS

1. Explain how the cost of advertising is paid for. Give instances. Explain how money is sometimes wasted.

2. What do you think should be done about advertising?

3. A business man points out to us that most of the large advertisers of twenty years ago are now supplanted by a new group of companies. Do you think that advertising campaigns of the future are likely to drive out the present companies? Is this kind of competition beneficial?

4. Mention some of the advantages to the public in newspaper advertisements.

5. Make a study of the small advertisements in newspapers and report to the class what you find out.

6. Study the advertisements in some of the magazines and tell about the beneficial results of these advertisements.

7. Can you see any way in which delivery charges can be reduced? If so, report to the class.

8. Can you give illustrations of expensive wrappings, equipment, or buildings?

9. Have you any suggestions about changes in taxation laws?

10. Two of you may take opposite sides of the question of extending government ownership. Confer with each other first to find out the main questions on which you differ, and present your arguments before the class.

11. What is the relation of some of the questions of this chapter to politics? Do you think economic questions should be carried into politics? Are they there already? What attitude do you think the government ought to take toward business?

COSTS OF INEFFICIENCY

Labor turnover. When the management of a factory is bad and no attention is paid to the workers, naturally enough, though the worker may present himself at the factory door anxious to work there, he may shortly change his mind and leave. Some factories have had to hire 3000 persons during the course of a year in order to keep up a steady force of 2000. This turnover of labor is very expensive, because it usually costs the company from $25 to $150 to hire and break in a new person and have him reach his proper efficiency. If he then leaves, this process must be repeated. Of course, the fault is not always that of the company. Certain companies, however, have been able to reduce their labor turnover to a very low figure and to educate their workers to try for promotion inside the factory rather than through changing to another establishment.

Young boys and girls are particularly bad in their tendency to drift about from one job to another. No doubt some jobs are not worth holding very long, and usually there is a valuable experience in working for several employers during the course of your early vocational experience. But it is not a good sign if you change too much, and this changing, whether in young or old, is one of the causes of the high cost of production, and thus of the high cost of living.

Lack of education. Lack of education of the worker is another enormous cost which is borne by all of us. When people in the rubber industry, for example, are ill adapted to their work and do not know how to do it well, they waste material, make cuts in the automobile tires they are making, get the canvas on with a twist instead of smooth, and thus lay the foundation for a blow-out and a scrapped tire.

Consider the following figures. In 1909 this country spent $401,000,000 for public education, while at the same time the total income of all workers was a little less than $29,000,000,000. In 1919 we spent almost $900,000,000 on education, and the income was $66,000,000,000. Thus the increase of expenditures for education of 124 per cent was accompanied by an increase in income of 128 per cent. While increasing our expenditure $499,000,000 we gained an increase in income of approximately $37,000,000,000. These figures would indicate the way to increase production and to lower the cost of living. Of course, however, we shall be no better off if we have to pay for the costs of living in a foolish or extravagant manner.

Depressions and unemployment. Another cost of bad management, due to the ignorance and perhaps the selfishness of all of us, is represented in the periodical depressions and times of unemployment. Some writers on politics and economics have talked about the "law of supply and demand" as if this law were something like the weather. The theory is, we cannot control the weather; all we can do is to protect ourselves against it. We know now, however, that

the law of supply and demand, and depressions, business cycles, and periods of business unemployment, can be modified or controlled when we are more intelligent than we are at the present time.

There are on an average about a million and a half industrial wage-earners in the United States constantly unemployed, taking poor and prosperous years together. Wage-earners lose about 10 per cent of their working-time through unemployment, and this is in addition to loss of time due to sickness and labor problems. About ten days per year, or 2½ per cent of the working-time, is lost from sickness and other disabilities, while only 1 per cent of working-time is lost on account of strikes or other labor disputes.

Partial unemployment—due to part-time operation, shutdowns, waiting, and related causes—occasions a loss of about 10 per cent more of the working-time of wage-earners.

A summary of the above figures indicates that many workers are unemployed something like 20 per cent to 25 per cent of what would ordinarily be the working-time. In the coal industry the average is much worse: something like ninety-three good working-days as an average are spent in idleness, only 10 per cent of this lost time being due to strikes and 90 per cent to inefficiencies in management and to general conditions which we have already described.

The cures for unemployment are, first and most important of all, a general study of the whole question, and of all the problems connected with the economics of industry, such as you of the next generation ought to carry on.

The economic disease of unemployment shows itself in waves of industrial and commercial activity which rise to a crest every few years and then recede, through what is called a crisis, to a depression. Every seven to ten years most businesses and industries are feverishly excited with prosperity, and buying and selling goes busily forward. This brings on a time of artificial stimulation and excitement, which leads to excessive buying and production. In 1919 anybody

could sell any article without half trying. Wildcat businesses were organized, huge profits were made, and high wages were the rule. New companies were being organized and extensions built. One very wise automobile company refused to make extensions or to participate in this false prosperity, with the result that it suffered almost no effect from the depression which followed, and continued producing automobiles when other factories were quiet. We were fortunate, in 1920–1921, in being able to slow down the toboggan ride, by means of the Federal Reserve system which was organized in President Wilson's first administration. By increasing the rates of interest and refusing to loan to speculative enterprises, a gradual "deflation," or checking of extensions, was accomplished without the suffering manifested in previous crises. Unfortunately, the farmers suffered worst, since their prices fell much faster than those of other goods. There was much unemployment. In 1921 things began to move forward and people began to face a future era of normal activity and prosperity. Let us hope, however, that this prosperity will not lead us to another period of excess. The entire population is much better informed about the whole matter now than it used to be. If you will study this question, you will be able to add to the general intelligence rather than to the speculative tendency, selfishness, confusion, doubt, and lack of confidence.

Agricultural economics. The economics of agriculture might be a whole chapter by itself. We wish to speak here of only one or two points. Farm tenancy is an important problem connected with agriculture. Something like 60 per cent of all farms are operated by owners, but in certain parts of the United States from 50 per cent to 70 per cent are operated by those who rent. One who rents a farm will hardly improve its fences, soil, buildings, or crops, and usually soon moves on to try another. Another problem is the matter of mortgages. When the price of land becomes high, money must often be borrowed. In certain parts of the

United States it is well known that the bankers, rather than the farmers themselves, own the farms. A rural credit system gives the farmer money at a lower rate of interest than formerly, and just before he sells his crops he frequently has to borrow in large amounts. This means that interest as well as taxes must be taken out of the proceeds of the farm before the farmer has any profit, and thus the cost of food is raised. Storage is another problem. The apple-grower of Virginia must allow forty-five cents on each barrel of apples for storage during the winter months.

Production per acre has been much discussed in America, but production per man is probably far more important. Whatever occupation you enter, you will be much concerned with the prosperity of the farmer, since most raw materials for food, clothing, and shelter come out of his work. Whatever can be done to benefit the lot of the farmer will be for the benefit of all of us.

Economic interdependence. What happens when somebody demands, without adequate justification, a price for goods which is too high or a wage which he is not earning? Suppose, for example, landlords decide to get higher rents than are justified, just because other houses are not available. Suppose they determine to get 20 per cent on their money. The doctor, the farmer, the baker, the grocer, the mechanic, the laborer, and all the rest begin to pay higher rent, the cost of living goes up, and the cost of doing business is increased. The grocer in turn must charge higher prices to meet his increased rent, the baker must charge more for his goods, and the doctor must increase his fees. The mechanic and the laborer are then left without adequate wages, and they in turn must demand more. If the landlord needs repairs done on his building, he must pay higher wages to the laborer and the mechanic because of the increased rents which he has charged.

Another way of stating our problem is to say that a man is no better off if his wages are doubled, provided all the

prices are doubled also. If you have just $20 to buy a $20 suit of clothes, you are in exactly the same situation as if you had $40 and had to pay $40 for the same suit.

If everyone at the same time tries to be selfish and to obtain just as much money as he possibly can while giving just as little service in return as possible, society then is like a man trying to pull himself up by his boot-straps, or a man trying to sail a boat with a pair of bellows. If a man in an automobile-tire factory produces five dollars' worth of tires and then proceeds to use up five dollars' worth of tires, gasoline, and other goods after working-hours, he is a drag on the community and not an asset.

Economic fallacies. This leads us to the consideration of certain definite fallacies which are related to economics and the occupational world. Let us briefly consider them in order.

1. "Wages come out of capital." We have already considered this idea. It is sometimes expressed by agitators who tell men that when they have worked only two hours out of the eight, they have paid for the cost of their own wages and that the other six hours are simply to put money in the pockets of the employers. We have given figures enough to disprove any such idea, especially those which show the income of capital to be only one sixth that of labor. Even if capitalists could be persuaded to lend their money and their planning and their risk for nothing,—which, of course, they cannot,—still the increase in wages would be only a small fraction in addition to the present amount.

2. "If you work slowly, your work will last longer." "Work hard and you may work yourself out of a job and be fired." These statements seem true in particular instances but lose sight of the benefit to society in the large. A bricklayer completing a job Thursday afternoon might find it difficult to pick up another for the rest of the week, and we must therefore pay such a man for the risk he takes in not having continuous work; but if he strings his job out to Saturday noon, he makes the cost of building higher.

3. "There is not work enough to go around." In times of financial crash this is, unfortunately, true; but it is only because there is a paralysis of business and industry, and people cannot afford to buy. Normally, if people work hard and produce goods, their wages can be high and prices low at the same time. Thus people will be encouraged to buy better houses and to spend more money on books, travel, and other good and necessary things; in this way everyone will be busy and happy. Civilization seems to require greater and greater expenditure; but, obviously, money cannot be expended unless it is first earned. It can be earned only by production. In normal times the wants of mankind will never be satisfied. If they ever are in the future, we can reduce working-hours.

4. "Extravagant spending of money is valuable because it gives people work." Giving extravagant parties is supposed to be valuable because of the large number of cooks, dressmakers, and others who are provided with work. The point to consider, however, is that this same money would be used for other purposes even if it were put in the bank, and these other purposes might easily be selected so as to provide for the welfare of society better than do these extravagances.

5. "Money in the bank is not as useful to society as money spent." This theory is that spending money gives people work. But we must remember that the money in the bank is also lent for spending, and probably for spending in much wiser ways than would otherwise be the case. A committee of the bank is careful to see that the loans are made to people who are making good use of the money.

6. "Accidents and fires furnish men with work for repairs and rebuilding." On this principle an automobile-repair shop would be justified in sprinkling tacks in the road to cause punctures. The effect, however, would be to drive people away from the idea of owning automobiles, and the auto mechanic's true prosperity, like that of the doctor's, is in

keeping machines in good order instead of bad. The needs of humanity are so numerous, varied, and extensive that there will be plenty of work for all.

7. "Every increase of pay is an advantage." We have handled this question above in discussing what happens when the price of goods is raised at the same time.

You pay the bills. You probably know that in most American cities the children now in school will pay for the school buildings. We of the present generation have not paid for them yet but have issued bonds; that is, have borrowed money to erect them. These bonds are to be paid off in part each year, up to a total of twenty, thirty, or forty years. Thus, when you begin your active life of production in whatever occupation you choose, you will contribute through taxation to the payment for those buildings in which you went to school. The same is true of bridges, roads, city halls and many others of the permanent improvements which you of the next generation will use. It is also true, as we have indicated above, of advertisements, delivery service, rent, and all the rest. If your electric-light company has expensive advertising signs, or show windows demonstrating washing-machines, heaters, or lights, you, of course, pay the bills when you use electricity. We also pay the bills of the government. Civilization is a very costly affair, and every cent of its cost must be paid for. When we are more intelligent in our selection of our representatives, we can insist on plans of economy. At the same time, if we extend the government service, we must expect to pay the bills. Thus, if we require our city government to keep the streets clean and to light the city at night, and if we want up-to-date fire equipment, beautiful school buildings, extensive libraries with branches throughout our community, and all the other needs of a modern community, we must be willing to pay the bills. But every one of us must choose his vocation wisely and labor effectively so that the goods he produces each day may be a little greater than the wealth he expends.

EXERCISES AND PROBLEMS

1. What are the reasons why people leave their employment and seek new jobs?

2. Mention some of the expenses connected with a change of men in a job. How are these expenses paid?

3. Is it more expensive for the employer to have a new errand boy or a new buyer or salesman? Why?

4. What can you tell about the industrial depression of 1920–1921? What were its causes? Describe some of the bad conditions which attended it.

5. What is likely to be the effect of unemployment upon a man's family life, morale, and physical condition? What losses are there besides those due to the lack of wages?

6. What can people do to prevent or lessen depressions and unemployment?

7. Give some illustrations of the interdependence of various workers in financial matters.

8. Why is it important for a man to produce more than he consumes?

9. Did you ever hear of some of the economic fallacies which we have answered above? Give illustrations. Different members of the class may give enough to cover all these fallacies.

10. Give illustrations showing how all bills must be paid by the public.

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CHAPTER XXIII

THE MATTER OF INCOME

What do you deserve? No doubt you deserve at least an opportunity to produce wealth in your occupation and to have a fair return. This matter of a fair return, however, is one of the most difficult things to find out about. Some people are fond of using as a motto "A fair day's pay for a fair day's work." This is a good motto, and probably no one in the world has any objection to it. The difficulty is, however, in finding out just what a fair day's pay is. We have various methods of measuring a fair day's work, but until the laborer knows more about the cost of production, he cannot judge what his fair pay should be. If you live a life which is simple and sensible, certainly your work ought to yield you enough to maintain this sensible living. If you want motor cars, travel, and expensive luxuries, it may be that you do not deserve them and should not have them. Anyway, the use of luxuries ought to contribute to a man's or woman's efficient work, whereas it too often detracts from it.

You deserve, then, no doubt, an American standard of living; that is, an opportunity to support yourself and those dependent on you in reasonable comfort, with an opportunity to save something for emergencies and old age. That is, you deserve it if you will produce it.

Some few unfortunates are not able to produce enough to meet their living-costs, and these, of course, must be helped through some method of private or public support. But if you are a high-school pupil, there is no reason why you should not choose an occupation which will give you a standard of living well above the fear of unemployment, sickness, or other emergencies.

What wages are. We cannot repeat too often—though of course we shall not elaborate the arguments already given—that your income is merely your *product* translated into money, our convenient medium of exchange. Of course, the full value of what you produce is not given you, because there must be subtracted the costs of planning, supervision, interest, and risk. Is there any real difference between a salary paid once a month and a weekly wage? We see no real difference, though the salaried person is in a more nearly permanent position and is probably in a professional, business, or executive position, where mental effort is important.

How big shall your income be? The International Harvester Company recently worked out an interesting comparison, basing its classification of workers on four points: hazard, labor supply, knowledge, and intelligence. Each individual was rated also on quantity of production, quality of production, and personal qualifications, which include regularity of attendance, length of service, general attitude toward work, etc. The rate for common laborers was taken at 100 per cent, and all the other workers were given rates based on the character of their position and their work. Thus laborers who did heavy rather than light work, but whose tasks did not require a great degree of intelligence, were rated from 110 to 120 per cent. All-round experienced patternmakers were rated 180 to 220 per cent. Other factors often taken into consideration in setting incomes are the length of time to learn, the amount of job instruction necessary, regularity of employment, responsibility, social position, the disagreeable character of the work, possibilities of advancement, wages in the community, wages in the industry, and the profits of the business.

Your own income must be based on such characteristics, and also on your appreciation and application of the various kinds of advice and guidance we are giving you in this book, as well as on such other help as you can obtain from teachers, employers, self-study, and progressive self-education.

Methods of payment. Many persons are paid on a time basis; that is, the working-time is set, and weekly or monthly payments are made on the basis of regular service. Such salaried workers are sometimes given vacations, whereas wageworkers do not often receive paid vacations.

Another common method of payment is called the piece rate. If a woman can cut up thirty bushels of apples a day, she may receive six dollars, whereas if she does but ten bushels, she receives two dollars.

Sometimes a bonus is given. A certain amount of work is set as a regular task, and if the task is completed and exceeded, the extra work is rewarded by a special bonus.

Again, various profit-sharing systems are organized, by which a company in its prosperous years divides its profits with its workers.

Earnings and the cost of living. Since the use of wages is to give a person a living, it is natural that there should be an intimate relationship between the cost of living and the amount of income. This is a very baffling problem, however, and only a few factories have been able to work out an index-number or percentage system which will automatically increase the wages of its workers when the cost of living goes up.

We know that at the present rate of production many workers, through lack of training, skill, or interest, do not earn enough to support an American standard of living for their families. The only cure for this situation is education. Meanwhile employers themselves have a responsibility, for they certainly cannot feel very comfortable paying men a wage on Saturday night which they know will not support a good standard of living. Clearly, however, while men are ignorant and refuse to stay in school, and behave in such ways as to cripple their efficiency, they cannot expect to produce enough to be worth more than they are at present paid. You who graduate from high school should feel a responsibility for those of your comrades who have left

school, because you can help them in their later progress notwithstanding their educational limitations. For your own career you should plan a productive standard which will keep your wages above your cost of living. In 1919 we had a series of strikes unprecedented in the history of the country. The cause was the increase in the cost of living, which left workers with low wages while prices were soaring. In 1921, and again in 1922, employers everywhere were inclined to lower wages because the cost of living was going down; strikes resulted through the desire of workers to keep their living-standard high. The necessary and inevitable adjustment of income to the fluctuation in the cost of living is a matter for the next generation to solve.

Wages and collective bargaining. A man in need of a job is hardly on a fair basis in bargaining for his services with an agent of an enormous corporation. In America, as things are now, one can hardly secure an opportunity to work at all without asking the permission of somebody who has become an employer. This creates a situation out of which collective bargaining has arisen. The workers of an entire factory organize committees to meet with the managers to work out wage scales, or union agents for an entire industry throughout the country deal with agents of an association of manufacturers. Individual bargaining is still very common, but the necessity and justice of collective bargaining is also being recognized. It is clear, whatever we may think about unions or manufacturers' associations as they are now, that men doing similar things will coöperate, and one important basis of coöperation will always be centered about the question of wages.

Income from a business of your own. If you have a grocery store, garage, tailor shop, fruit store, factory, or any other business of your own, it is quite impossible for anyone to tell what your income will be. Enough has already been said in this book to indicate to you that you may come out with an income of minus a thousand dollars, whereas, on

the other hand, you may have a big flood of prosperity and gain much more on the other side of the ledger. Most businesses struggle along with a very small income for their owners, and a very large majority of them have to be closed up as unsuccessful. You must study cost accounting to know what to charge, and you must compete with some owners who are so foolish as to sell at a loss without knowing they are doing so. Even at best you hardly know where you are coming out until you take your inventory.

Comparative incomes. We now turn to a table prepared especially for this book and designed to illustrate the relative tendencies in the various occupations.

The Bureau of Vocational Guidance of Harvard University has from time to time corresponded with government officials on the possibility of an index number for occupations. The difficulty has always been that no figures have been obtained on annual incomes, and officials of the Bureau of Labor Statistics at Washington have therefore never prepared such an index. An interesting attempt to establish a large number of proposed salaries was made in the report of the Congressional Joint Commission on Reclassification of Salaries, issued in 1920. This report sets up standards of workmanship and compensation for most of the occupations under the civil service. It is a careful report, and the *relative standing* of the salaries of the various workers is well considered.

On the basis of this report and such other data as we have been able to obtain, we have constructed the index numbers given below. You will note that a middle group is taken as 100 per cent, and that the other occupations are expressed in terms of percentages above and below this group. If our index numbers were exactly correct, they would enable the reader to find the most common earnings in any given occupation if he knew the most common earnings in any other occupation.

Our figures are not accurate, and can never be made so until in each and every occupation a large number of annual incomes are determined. Next, the most common income in each occupation must be determined, and the range of the middle 50 per cent of workers would need to be obtained so that the reader could get an idea of the variation. The table we have given does not indicate the inevitable overlapping. It is quite clear, for example, that there are some

saleswomen and clergymen whose incomes are very much higher than the average of the locomotive engineer. The reverse is also true.

Directions for using the table. Choose any occupation with which you are familiar and of which you feel fairly certain that you know the average, or most common, income. Divide this figure by the index number given in our list, and multiply the result by the index number of any occupation the income of which you wish to find.

The index numbers given will need correction for such matters as the parsonage for the clergyman, rooms and board which come with certain occupations, and irregularity of employment. We have endeavored to make these index numbers represent the most common income for mature and established workers in the occupation. This would exclude mere beginners, who are not getting a regular fixed income but are merely on trial to see if they will make good. We have figured our incomes on the basis of approximately 2500 working-hours per year. If, in your region, the bricklayers, plasterers, or coal-miners work an average of 220 days a year, this will have to be taken into account in the use of the figures. This will be especially true of certain occupations we have noted, since these workers are usually paid hourly rates and their work is likely to be seasonal.

Reduce the known income expressed in dollars to 1 per cent by dividing by its index number. Then find the desired income statement by multiplying by the index number of the worker whose income you wish to find.

Sample computations are as follows:

1. If you happen to know that the present common income of locomotive engineers is $2900, and you wish to find the approximate income of the street-car motorman, you would proceed to find it as follows:

$$\text{Motorman's income} = \frac{\$2900}{161} \times 88 = \$1585, \text{ or about } \$1600.$$

2. Bricklayers working 1500 hours make $1200. This income at 2500 hours would be $\frac{2500}{1500} \times 1200 = \$2000$. Applying the formula above to find the concrete worker's income: Concrete worker's income on full-time work is $\frac{2000}{111} \times 94 = \$1694$, or approximately $1700. If a concrete worker in your region works 1600 hours, his income would be approximately $\frac{16}{25} \times 1700 =$ about $1100.

Index Numbers of Occupational Incomes

Note. This table is based on annual incomes of various workers. The common earnings of each of seven occupations near the middle of the table are taken as 100 per cent and those of other workers are ranged above and below in corresponding percentages. See the explanations above. Students who use this table must remember that for most vocations there is a wide range of income among the many workers which represent each. For example, the index number for many high-school teachers would probably be below 50, and for some it would be above 150. For an alphabetical list of these workers see the book index at the end of the last chapter.

Office boy	42	Meat-cutter	63
Saleswoman	44	Porter	63
Lumberman	46[1]	Stableman	63
Clergyman	52	Teamster	63
Florist	56[1]	Telephone operator	63
Hairdresser	56	Truck-driver	63
Chambermaid	57	Washer and starcher	63
Building cleaner	57	Reporter	64
Dressmaker	57	Factory worker	67
Laundress	57	Stationary fireman	67
Musician	57	Office machine operator	67
Rubber worker	57	Packer	67
Seamstress	57	Paper-box maker	67
Domestic servant	58	Switchman	67
Express messenger	58	Elementary-school teacher	67
Housekeeper	58	Bindery worker	70
Jewelry worker	58[1]	Cook	70
Tannery worker	58[1]	Machine operator	70
Watchman	58	Marine fireman	70
Departmental clerk	60	Matron	70
Coal-passer	60	Poultryman	70
Elevator operator	60	Press-feeder	70
Life guard	60[1]	Timekeeper	70
Park laborer	60[1]	Dry-cleaner	72
Waiter	60	Expressman	72
Deliveryman	63	Milliner	72[1]
Freight-handler	63	Paper-mill worker	72
Laborer	63[1]	Baker	73
Library assistant	63	Blue-print maker	73

[1] May be reduced below this figure on account of seasonal character of work. See full explanations on using this table, and a discussion of its limitations, beginning on page 395.

Boiler-cleaner	73	Special-class teacher	89
Chauffeur	73[1]	Boat-caulker	90
File clerk	73	Cashier	90
Labor-gang boss	73[1]	Chef	90
Nurse	73	Truant officer	90
Playground director	73[1]	Brakeman	93
Building caretaker	75	Dietitian	93
Janitor	75	Concrete worker	94[1]
Freight agent	76	Credit man	94
General clerk	77	Leather-cutter	97
Dairyman	77	Mattress-maker	97
Farmer	77	Pharmacist	97
Farm foreman	77	Secretary-stenographer	97
Radio operator	77	Shipyard worker	97
Deck hand	78	Steel worker	97
Instrument worker	78	Upholsterer	97
Ironworker	78	Welfare worker	97
Janitor, engineman	78	Public-service fireman	98
Draftsman	80	One-man-car motorman	99
Food-inspector	80	Architectural draftsman	100
Gardener	80	Bandmaster	100
Stenographer	80	High-school teacher	100
Taxidermist	80	Letter-carrier	100
Tree surgeon	80	Orchardist	100
Chaplain, army	83	Tailor	100
Coal-miner	83[1]	Typesetter	100
Forestry assistant	83	Clothing-factory worker	101
Ferryboat mate	83	Express agent	101
Piano-tuner	83	Blacksmith	104
Salesman	83	Foundryman	104
Scientific assistant	83	Shoemaker	104
Shoe-factory worker	83	Foreman-mechanic	105
Ticket agent	83	Policeman	105
Y. W. C. A. secretary	83	Post-office clerk	105
Railroad signalman	86	Bookkeeper	107
Advertising agent	87	Game warden	107
Barber	87	Steward	110
Cataloguer	87	Tug captain	110
Telegrapher	87	Bricklayer	111[1]
Watchmaker	87	Floor manager	111
Street-car conductor	88	Machinist	111
Street-car motorman	88	Y. M. C. A. secretary	111

[1] May be reduced below this figure on account of seasonal character of work. See full explanations on using this table, and a discussion of its limitations, beginning on page 395.

Clerk of municipal court . . 113
Clothing-designer 113
Instrument-maker . . . 113
Railroad mechanic . . . 115
Glass-blower 117
Inspector of steam boilers . 117
Compositor 118
Electrotyper 118
Locomotive fireman . . . 118
Normal-school teacher . . 118
Pressman 118
Steel-and-copper-plate printer 118
Stereotyper 118
Dentist 120
Photographer 120
Cabinetmaker . . . . . 121[1]
Carpenter . . . . . 121[1]
Gas-fitter . . . . . 121[1]
Patternmaker 121
Plumber . . . . . 121[1]
Steam-fitter 121
Boiler-maker 124
Brass worker 125
Coppersmith 125
Inside wireman . . . . 125[1]
Linotypist 125
Painter . . . . . 125[1]
Personnel manager . . . 125
Plasterer . . . . . 125[1]
Printer 125
Proofreader 125
Quarryman . . . . . 125[1]
Sheet-metal worker . . . 125
Sign-painter 125
Stonecutter . . . . . 125[1]
Tinsmith 125
Teaching principal . . . 127
Sergeant detective . . . 132
Railroad conductor . . . 133
Copy editor 139
Electrician . . . . . 139[1]
Hoisting engineman . . . 139[1]
Physician 147
Police-department captain . 147
Editor 160
Locomotive engineer . . . 161
Buyer 167
Engraver 167
Statistician 167
Train-dispatcher 169
Librarian (city) 178
Veterinarian 183
Animal husbandman . . . 194
Aëronautical engineer . . 194
Architect 194
Architectural engineer . . 194
Astronomer 194
Bacteriologist 194
Chemist 194
Civil engineer 194
Electrical engineer . . . 194
Highway engineer . . . 194
Marine engineer 194
Mechanical engineer . . . 194
Mining engineer 194
Nautical engineer 194
Radio engineer 194
Structural engineer . . . 194
Entomologist 194
Forester 194
Geologist 194
Goldsmith 194
Horticulturist 194
Landscape architect . . . 194
Map-draftsman 194
Mathematician 194
Metallurgist 194
Motion-picture director . . 194
Naval architect 194
Ornithologist 194
Soil scientist 194
Zoölogist 194
Lawyer 197
Surgeon 200

[1] May be reduced below this figure on account of seasonal character of work. See full explanations on using this table, and a discussion of its limitations, beginning on page 395.

Who shall take the lower incomes. We very much hope that you of the next generation will destroy the value of this table by changing the situation as it exists today. If the carpenter, plumber, draftsman, and the others have just a reasonable standard of American living, why should we pay lower rates to other workers? Clearly we should not, but we have to do it at present because we have not yet made them productive enough, and, furthermore, our society is not organized with the best possible efficiency and righteousness.

One of the best tasks we know about, therefore, for some of you of the next generation is for you deliberately to choose one of the occupations listed below 100 and to make your service in that occupation so valuable that it will command an American standard of living.

How to spend your income. The smaller the income the larger the proportion which will have to be spent upon necessities. A recent plan for the use of a $2500 income is as follows: 79 per cent for necessities, 11.2 per cent for advancement, and 9.6 per cent for surplus. This would mean for food $55 a month; for shelter, $45; for clothes, $35; and for operating or maintenance of the home, $30. For education, recreation, etc. $23.33 a month would be used, and $240 a year for savings of various kinds. Those who have lower incomes must reduce some of these items. (Which can be reduced?)

Banks frequently issue booklets describing the various budgets which should be worked out for people of various incomes. It is very important for you and your future home partner to plan your budget so that you may not spend too much for rent or clothes or food in proportion to the other requirements of your life.

Remember again that the purpose of your income is that you and your family may live as worthy American citizens. This is not the purpose of work, but of the income. Even if we needed no incomes, we should still work because of the necessity for expressing ourselves through creative effort.

EXERCISES AND PROBLEMS

1. Do you think of any standards for measuring "a fair day's work"? Can this be applied to all occupations? Show how it is easier to measure output in some occupations than in others.

2. What do you think society should do for those who, no matter how hard they work, cannot produce as much as they consume?

3. Do you think that disabled or unfortunate persons should be required to produce all they reasonably can?

4. Can you investigate wage conditions in a factory or store and tell how wages are fixed?

5. What would happen to a business which paid out more in wages and cost of material than it received from sales?

6. Give the advantages and disadvantages of pay by piecework.

7. Do you know what is the cost of supporting a family of five in your neighborhood? What relation should income bear to this figure?

8. If a family of five cannot produce goods enough to make its cost of living, what should be done? Give reasons.

9. Show the advantages and disadvantages of collective bargaining. Perhaps two of you can arrange a debate.

10. Show how it is impossible to give any general figures for the annual income of such a person as a retailer, wholesaler, garage-owner, manufacturer, etc.

11. Explain how to use the table of occupations. Give illustrations.

12. Study the list of occupations and point out some interesting things which are not generally understood.

13. Discuss the question of variation in income in each occupation, such as that of laborer, teacher, bricklayer, or engineer. How could this variation and overlapping be represented in the table?

14. Can you tell anything about budgeting one's income? Explain to the class this system and its advantages.

REFERENCES

Investigation of incomes may be made by writing to state and Federal departments of labor, to trade-union officials, and to professional schools and associations.

CHAPTER XXIV

SECURING A POSITION

If you are still in school when you read this chapter, and have carefully studied what we have already said about the world of occupations, you will not be in a hurry to leave school and try to secure a position. You will know better than to take the first opportunity offered or to get enthusiastic about any offer made to you. You will know perfectly well, no matter how good the offer appears, that by staying in school longer you will secure better and better opportunities.

When you think the time for securing a position has come, consult with the school people first. Tell them all about the possibilities and secure their advice. They have your welfare at heart always. In many schools there is a special person, perhaps called a vocational counselor, whose duty it is to help those who are forced to leave school to secure positions.

Sometime, however, the task of securing a position will be a very real problem for you. It is for this time that the present chapter has been written. Think over these bits of advice carefully and be ready, when your time comes, for a sensible and successful beginning when you start out to secure your first job.

Choosing an employer. All firms are not alike. Some are unprogressive, years behind the times. If you work for them you will learn bad habits, slipshod methods which will unfit you for the high-grade work demanded by better firms or higher positions. Other firms have nothing in promotion to offer. They engage an outside man when important vacancies occur, they take no interest in training subordinates, their work is that dull routine which puts the mind to sleep,

while even their best employees are liable to discharge at the whim of the boss or lack of orders.

"But the employee," says the former manager of the National Cash Register Company's employment department, "when he takes a position in office or factory, puts everything he is and has into the venture. He gives his time, his service, his experience, in return for a fixed wage. He gives more, however. He surrenders his individuality, his reputation, his capacity for growth—in one word, his business future—into the keeping of the organization he joins."

The employer investigates you thoroughly before he gives you a position; he wants to take no chances. Is it not even more important that you investigate him thoroughly, since you have vastly more at stake?

Locating the vacancy. You are not to conclude from what has just been written that all you will have to do is to weed out less desirable employers and take your pick of firms. Even if you stood first throughout your high-school course and came to the city with several medals, including a special diploma from a business course, you might have difficulty in locating one desirable vacancy. But when you accept the point of view that vacancies need to be sought for, there are at least five ways in which you can locate them:

1. "*Help Wanted" advertisements.* The daily papers and Sunday editions contain lists of openings. These sometimes afford you an opportunity to place yourself. Trade papers also contain such lists, which, while not offering so many openings, are more valuable since they are restricted to the particular work you desire. First, therefore, you may read the "want ads" in the daily papers and in business magazines.

2. *Employment agencies.* Some agencies perform a real service and charge a reasonable price. But be sure that you are dealing with a reliable firm, able to do what it claims, before you pay for service in advance of securing the position. Your name on the books of one or two good agencies will very likely prove to your advantage.

3. *Friends.* Your friends may hear of openings. Let them know your needs. If you have qualifications of your own upon which to stand, friends will be glad to help you get a start, and it is not asking too much of some to request them to do this.

4. *"Positions Wanted" advertisements.* If you are seriously in earnest, you will not remain idle while waiting for a vacancy to appear. It will cost but little to place an advertisement of your own in the papers. In planning this advertisement try to write it so that it will bring results. Employers are looking for efficient producers. Would this, for instance, which appeared in the *New York Times*, interest them?

> Harvard Graduate wants position with future; willing to start moderately and prove himself with time; have studied accounting; would prefer mercantile house. D. 178 *Times*.

Does this young man know what he wants to do? Has he definitely prepared himself for anything? Does he use good English? If you were an employer, would you send for him? Will he be as likely to get a position as the young man who, though in all probability much less expensively trained, writes as follows:

> AN EDUCATED young man, 26, with knowledge of bookkeeping and office requirements, desires position; good penman, industrious, persevering. W., 127 Powell St., Brooklyn.

In preparing the copy jot down a list of your most important qualifications. With prospective employers in mind, arrange these in as clear, forceful, and interesting a way as you can. And do not stop with the first attempt. There is no merit in writing an average advertisement; what you want to develop is the ability to write one that will secure you a position. Take your copy to the newspaper office and get one of the clerks to help you arrange it in display form. This will make it more noticeable and readable. If the position sought is of importance, you can afford to present an advertisement something like this:

BUYER WANTS POSITION

Buyer in fur department, large Chicago firm, wants similar position with New York dept. store. Knows fur business from ground up; 16 yrs. experience, did $200,000 last year. 35, married, highest references including present employers. Wants good salary with prospects, but is worth it and is willing to prove it. F. B. C., *Dry Goods Economist.*

5. *Estimated vacancies.* Suppose that you, in this case a civil engineer seeking a position, see in the morning paper that the surveying for a new trolley line is to commence in three weeks. Has it any meaning for you? The quick-witted youth will without delay have his application hurrying toward headquarters. New developments and reorganizations are recounted continually in the daily and trade papers. They mean vacancies and as such have an interest for you.

In nearly all large establishments there are changes—either expansions, resignations, or other readjustments—going on all the time. Practically every concern with which you are well qualified to work represents in this way possible openings. Keep your eye on these companies and send them letters of application. There may be no vacancy when the letter is received; but if the employment manager is favorably impressed, it will be filed, and a call may come later on. Do not be afraid that this action will give a wrong impression of you. The company seeks efficient employees quite as earnestly as you look for a good position.

By employing as many of these plans as seems advisable you should surely locate some vacancies. They may not appear in a day, and some that are found may not be desirable; but after a time the one sought will appear; then you can try to make it yours.

Applying by letter. 1. *Apply promptly with a well-written letter.* When you have learned of a vacancy, whatever the source of the information, *move.* If, for example, you expect a position through a want advertisement, read the paper early, prepare your reply, and get your application in the

hands of the manager while sluggards are deciding whether to try for the place. Your promptness will please the prospective employer, since business requires dispatch. When prompt service is especially demanded in a position, the applicant is favored who makes use of a special-delivery stamp.

Do not move so rapidly, however, that your letter is careless and weak. This would destroy your chances. Business men usually prefer to weed out applicants by letter, only the few desirable candidates being called for an interview. Consequently the foundation stone in getting a position is the ability to write a first-class letter. Few have this ability. Take the fifty letters in response to the "Office clerk wanted" advertisement; most are fit only for the wastebasket. If yours is unusually good—and you can learn to make it so—you become a favored man, marked for an interview.

2. *The essentials of a forceful letter.* The subject of letter-writing is too broad to be discussed in detail here and must be left to special books, several excellent ones being listed in the References at the end of the chapter. However, of really important matters there are only a few, and these with persistent practice you can learn to observe.

3. *Attention to the mechanics of a letter.* The mechanics of a letter includes such plain requirements as good spelling, proper punctuation, and paragraphing. Look at your letter also from the standpoint of art. Does it show ink spots, careless erasures, words crossed out, or crooked margins? Or does it stand out neatly, with a satisfying balance to the page? Use first-class heavy white paper and full-sized sheets, and number all pages after the first.

To have your letter typewritten is usually the best plan; if you do not operate a machine well, it may pay you to get a public stenographer to prepare your letter. For some positions, however, where good handwriting is important, it might be well not to send a typewritten letter. If you plan to try for any such position, it would pay you to develop your penmanship. "One of the surprising features we have

encountered," writes the manager of the National Employment Exchange, "is the very poor penmanship of both men and women applying for clerical positions."

Fold your letter with care, and make a neat-appearing packet which can be opened easily. Have the envelope harmonize with the letter both as to quality and color of paper and as to penmanship or typewriting. In the address be sure that your prospective employer's name is spelled properly; look at the advertisement or his letterhead or consult the telephone directory. Space the address so that the envelope presents a neat appearance.

While these may seem useless details, there are but few who can send a letter meeting these requirements. If you stand among these few, you may win the position.

4. *Cultivate a good style.* Your letter should show an accurate knowledge of English grammar and some ability to apply the fundamental principles of English composition, such as unity, coherence, emphasis. When in doubt, make your sentences short and as straightforward as possible. A common-sense, busy man will read your letter of application. Write to him in energetic, simple English, the best you can command.

5. *Winning qualities of your letter.* Shall you start your letter with "I" and make it a series of "I's" down the page because you think the man is interested in *you*? What the prospective employer wants is a certain amount of work done, and he is interested in you primarily as a means toward that end. See, then, that his point of view colors your entire letter.

To write a letter that will win the employer means, for one thing, that you must study his advertisement, his letter, and everything that will give you a better idea of what he wants. If his advertisement states:

> WANTED, in large banking-house, young man as assistant to bookkeeper. Experience unnecessary, but must be absolutely dependable, no bad habits, good penman. 520 *Herald*, Downtown.

—then why give a long discussion of how you won a prize in Latin and how you were employed for two years as assistant athletic director in the high school, and close your letter with "Hoping to be favored with the position"? Like most writers you have not answered his advertisement. Why not be exceptional and answer every point he makes?

If your penmanship is a wretched scrawl, if you are seen with questionable companions, and if you like to do as you please instead of what you are told, this position is probably not for you. Only an accident would enable you to receive it, and if you did you would soon be discharged. But if your penmanship is satisfactory, if you can truthfully say you use neither tobacco nor profanity and do not have any other bad habits, and if you feel that an employer could always depend on you, tell him all these things. Write the letter in your best penmanship—or typewrite it, inclosing a sample of your writing—and close your application with some such sentences as "This position is one which interests me very much, and I believe you would be pleased with my work. May I not call upon you soon for an interview?" Also, ask your teacher or pastor or Y.M.C.A. secretary to write what he knows about your character and ability.

When you have before you as clearly as possible all the requirements, draw up a list of your *qualifications related to this position.* Ask yourself a series of searching questions. What is there about me that this employer would like? What experience have I had which proves my ability? Am I dependable, speedy, accurate, and willing to work hard? Am I increasing my ability all the time? Can I do this work particularly well? Would my employer find in me a good investment?

Such questions will probably furnish the materials for a good letter. Strengthen your statement of these qualifications by telling how you read the latest trade journals, if you really read them, since employers like to have men who are progressive and interested in their vocations. Bring for-

ward any successful experience which will indicate likelihood of similar success in this position. Make your claims stronger by giving references or by having persons qualified to do so write letters recommending you. Prove your ability, if possible, by submitting some of your previous work. A young man, for instance, in applying for the position of assistant bookkeeper in a bank could increase his chances by laying before the president or cashier a neatly kept set of books, the result of his high-school course in bookkeeping.

6. *Length of the letter.* Write a long letter if necessary. We constantly hear the remark "Business men are busy; be brief." Business men are busy, but they are also shrewd buyers, and they are going to engage no young man on a guess. Lay your strong qualifications before your prospective employer, even if it takes several pages. How otherwise can he tell whether he wants you or not? If you have no extended list of qualifications and are applying for a humble position, there is no merit in sending a letter needlessly long. But in every case set forth your qualifications adequately and see that there is meaning in every word.

7. *Positiveness of the letter.* Make your letter positive. Do not in this first letter ask what the salary is, how long the hours are, or if the work is hard. If this man suspects that you are looking for an easy job, that you will be a drag on his business, your letter will go into the wastebasket. Do not tell what you cannot do, how you are out of a job, nor express doubt as to your ability to do this work or suspicion as to whether the company is first-class. Such things are negative; they get you nowhere. Admit your inexperience frankly, do not pretend to know it all, but urge strongly your interest in the work, your application, perseverance, and willingness to learn. Try to arrange for an interview.

All this may seem to be a great deal of trouble, but a good letter requires considerable effort. That is why most letters of application are worthless. By all means draw up a high-grade letter the first time you apply, even if it does mean

hard work. Keep a copy of it, and for the next position you apply for modify this letter to suit the case. If the position is similar, the same letter may be sent, the date and address only being changed. In this way making applications will become easier, and can be carried on more extensively until a position has been secured.

8. *Persistence in applying.* Do not be unduly anxious over results nor discouraged if nothing seems to develop. Remember that there are many other applicants; do not be cast down if someone else is elected. Your prospective employer may have done badly by not selecting you. And the best way to prove this to your satisfaction is by securing eventually a better position than he had to offer.

Applying in person. Employers will want to see you. That your letter has pleased them is evident when they ask you to call, but there are many qualifications and deficiencies which no letter will indicate. If the position is of any importance the personal interview is usually required. Whether this will be to your advantage depends somewhat upon your temperament. If you write well, but are timid and distrustful of yourself and have strong qualities which can be appreciated only upon long acquaintance, it may be your best plan of attack to dispatch a letter of application inclosing references and followed by recommendations of people who know you. Yet most employers are able in a personal interview to estimate a young man or woman accurately, and your strong qualifications for their work are not likely to escape detection. Your chances for appointment through a personal interview will be increased, we believe, by giving due consideration to the following details:

1. *Preparation for the interview.* Study the position with care—its requirements and your ability to meet them. Study the concern as well—its history, reputation, and special demands. Study especially, if possible, the particular person whom you are to meet—his methods, peculiarities, prejudices, and the qualities he esteems most highly. His favor-

able word means a position for you. Draw up a campaign that will get this word for you to begin work.

Get a good night's sleep; feel fit. Be particularly careful about your personal appearance. Be immaculately clean and simply but well dressed. If you show carelessness or poor judgment in personal matters, efficient men or women employers will not be likely to intrust you with their business affairs.

2. *Cultivation of attractive qualities.* Be on time. But do not overdo this and have to wait half an hour: this would prove you to be unbusinesslike. When your turn comes, walk forward with a firm step. Cultivate a bearing which shows that you possess self-respect; for if you respect yourself, others will likewise respect you. Cigarette stains and teeth discolored by tobacco will also disqualify you with many employers. Overdressing is also objectionable: do not apply when loaded with jewelry or perfume, or dressed for a party.

Courtesy is most important; good manners have pushed many persons higher. Remove your hat when entering the office (if you are a man), do not sprawl in the chair, stand up straight, and assume a confident and open appearance. You need not be a fluent conversationalist, but you should learn to use the English language in a correct, straightforward way.

These desirable qualities will help. While some are not essential, all are worth developing. This, of course, cannot be done in a day. Hence you should not wait until the notice from the big company to appear before the president at nine o'clock tomorrow lies open in your hand (such a moment, or one very much like it, is bound to come several times in the life of every ambitious young man). It is wise to prepare for it now.

3. *The emphasis of qualities essential in getting a position.* As the president of a big business puts it, "We want men who are continually thinking, planning, striving for us." An interview with an executive should be a clear indication that

you are interested in *work*, particularly in *his* work. He is interested in that, and if you are not, you should not take his time. Do not publish the fact that you are experienced, nor lay claim to qualifications that you do not possess, for some cross-questioning later on may badly discredit you and render worthless, as well, your claims of reliability. Think over everything that you have done which may justly be regarded as experience in this work. Most young persons have had more practical experience than will at first occur to them. If confronted with the fact that you are inexperienced, admit it; say you recognize that this is where you are weak. Look the employer pleasantly but firmly in the eye and reply somewhat as follows: "Everybody has to begin sometime. If you will let me try, I will take hold and do my very best. And I can promise that you won't be bothered by my inexperience very long." Executives who have climbed the ladder are apt to have a soft spot in their hearts for earnest young men and women. This man may recall having been once in your place himself, and how somebody gave him his first real chance to make good.

Be careful of what you say of former employers. You should not have left them without good reasons, and, if so, giving these reasons in a straightforward way is desirable. If you speak slightingly of them, the man before you will suspect that similar remarks will later on be made about him, and he will thus come to doubt that you possess proper loyalty. If you failed to make good through no fault of your own, give the facts. If you were discharged with good cause, admit your mistake; say that you have learned your lesson and are more valuable because of this unfortunate experience. Do not shift uneasily in your chair and appear overcautious when your former record is under question. The best way to prevent this is to have your record of such nature that you are eager to have it investigated. Begin in your very first position to lay a solid foundation. Prepare to do this by being a reliable student in high school.

Tell no hard-luck stories, and remember also that asking a man for a position is not begging. You stand ready to do things; it is to his interest to hire such a person. Have a deep-rooted faith in yourself, and thus impress him with your ability, your earnestness, and your willingness to serve him well. He will then feel that adding you to his force of employees is a wise move, and that he cannot afford to let such a young man or woman slip through his fingers.

4. *Clinching the position.* If at the close of the interview it is plain that no decision is to be reached until after others have been seen, do not hang on and on. Such persistence is no virtue, but cuts down your chances. Take a businesslike leave. If any opening for a letter is given, such as requests for additional samples of your work, for references, for filling out a questionnaire, etc., draw up a careful statement of this information and weave it into a letter which, in the light of all the interview has taught you, will set forth strongly your qualifications for the position. You are in this way once more impressed upon the employer's attention and are able to emphasize your serious interest in the position he offers.

In case he seems much interested in you, if you can touch upon the fact that he has your address, and if you can leave him with the idea that you have great confidence in being well placed in a few days, it will increase your chances of his giving you the position.

However, should you decide that your application has been so satisfactory that the direct question may be put, you might ask, "If my record, which you will get from these references, shows nothing against me, will you give me the position?" But should the employer already appear satisfied,—if he says, "I guess you are the one we want,"—say, "Thank you very much. I am ready to commence work the day you set." Then talk over the details of your new work.

After securing the position. Once the position is secured, it may seem that all is done. But it is at this point that many employees show themselves unbusinesslike and selfish. It

is good business policy, for one thing, to acknowledge the offer which reaches you through the mails. Assure the firm that you appreciate being chosen and that you will put forth every effort to succeed. Should you receive a refusal instead, it is well to reply, for everybody respects a good loser, and this company may have vacancies to fill later on and may remember to send for you.

If two positions are tendered, write a respectful letter to the employer refused. He has complimented you by this selection. It would show a mean nature should you snub him as soon as you can do better elsewhere. In case the salary in the position offered you appears much too low, do not refer to it contemptuously, but write that with your qualifications you do not feel that you would be just to yourself in accepting.

Let the friends whose names you gave as references know the outcome of your application, and assure them you appreciate their efforts. If this cannot be done with sincerity, it indicates a selfish spirit which deserves no help. Most teachers, friends, and former employers take an interest in young men and women who are climbing upward, and are glad to help them along. This is a real service they perform, and you should let them know that you so regard it.

EXERCISES AND PROBLEMS

1. Describe the kind of man or woman a good employer should be,—one that you would like to work for.

2. Describe the kind of firm for which you would like to begin work, paying particular attention to the question of the men and women with whom you would be associated.

3. Make a short list of the things that a good letter should emphasize.

4. Write a short statement on the topic "Things to be careful about when applying for a job in person."

5. Has your school any teacher or adviser who helps to secure positions? If so, describe the work of this person.

6. Give a general statement telling about all available means of securing work in your vicinity.

7. Give a statement showing the need for both broad education and definite preparation before applying for a full-time position.

8. Discuss mistakes sometimes made in letters of application and tell how they may be corrected.

9. Discuss mistakes commonly made in applying for a position in person and tell how these may be corrected.

10. Select an advertisement from a newspaper and tell how you would apply for the position described.

11. Select a partner and have an interview with him, one of you acting as employer and the other as applicant for a position.

12. Select a partner. One of you is to apply for a job, asking all sorts of questions about the work; the other is to evade the questions, describing the job in general terms, such as "a good job," "a fine chance for promotion," etc., just as an indefinite employer might do.

13. Write a letter of application, with the advertisement you answer pasted at the top of the page.

14. Try to secure an application blank from an employer. Explain its questions to the class.

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Many books listed in Chapters IX to XIX inclusive, and in the general list at the end of this book, give suggestions for securing positions.

CHAPTER XXV

EFFICIENT WORK AND ITS REWARD

Now that you have your position, fill it, outgrow it, and press onward to larger tasks. You are living in the great New World, where men and women are expected to do great things. With earnest conviction our forefathers set about subduing this vast continent. With sturdy zeal our fathers pioneered the West, and with tremendous speed we are turning the resources of our inheritance into the service of all men. A share of this work is for you. How can you best perform it?

Be energetic; keep fit for work. It is very homely advice to say, "Eat plain, wholesome food; if your work is sedentary, exercise each day; see that workroom and bedroom are kept well ventilated; do not tax your stomach with too much food or with stimulants, or with confectionery between meals; and make it a practice to keep regular hours and get a good sleep every night." Few things are more neglected. In this respect it is as if young men and women were content to carry the ball and chain, to be physically bound when they might be free.

These things are fundamental and must be heeded. To do work requires energy. A locomotive without steam cannot pull a car. And bodily energy at bottom is a product of food and air. Therefore, if the body receives sufficient nourishment, and is able to transform it as an efficient organism should, the person will have energy in abundance. This is needed today for success. To plow through massive tasks requires energy. Do not overlook these plain, simple matters; do not ignore your health. Correct thinking and planning is at the basis of bodily efficiency.

Be efficient; let every effort produce much. Scientific management is being everywhere introduced. The efficiency expert appointed by the governor receives more salary than the governor himself. In practically every phase of business, efficiency, which means adequate results, is demanded of all workers. Being efficient concerns first of all such matter-of-fact duties as getting to the office on time. "Let's take the instant by the forward top," says Shakespeare. "How I appreciate the boy who is always on time," says the president of the New York Central. Efficiency demands that you keep your files and desk well arranged, follow directions without asking continually how things are to be done, waste no paper or other office supplies, and keep confidential what you hear of your employer's business. It demands of you, also, to bear in mind that office hours are for business, not for writing private letters, reading newspapers, or idle chatting. Wages are paid for work. See to it that you earn yours. More than that, efficiency demands that you give *good measure* in the results for which you are paid; otherwise you could not produce the wealth out of which your wages come.

Be alert; develop initiative. Employers want men and women who think and do things, not those who wait to be told to do them. Have the courage to start out on a new line whenever the old has proved inadequate. "One false axiom you will often hear," says Andrew Carnegie, "which I wish to guard you against: 'Obey orders if you break owners.' Don't you do it. This is no rule for you to follow. Always break orders to save owners. There never was a great character who did not sometimes smash the routine regulations and make new ones for himself. The rule is only suitable for such as have no aspirations, and you have not forgotten that you are destined to be owners and to make orders and break orders. Do not hesitate to do it whenever you are sure the interests of your employer will be thereby promoted, and when you are so sure of the result that you are willing to take the responsibility.

"The rising man must do something exceptional and beyond the range of his special department. He must attract attention. If a shipping clerk, he may do so by discovering in an invoice an error with which he has nothing to do and which has escaped the attention of the proper party. If a weighing clerk, he may save for the firm by doubting the adjustment of the scales and having them corrected, even if this be the province of the master mechanic. Even if a messenger boy, he can lay the seed of promotion by going beyond the letter of his instructions in order to secure the desired reply."

The man of initiative is the exceptional employee. He does not say, "I am not paid to do that," and "The best thing about this job is five o'clock and pay day." He is the man whom employers count as a rare find,—the live subordinate who dares to go forward.

Be progressive: let each day, each position, be a stepping-stone. This does not mean idle dreaming of a $5000 position when you now get $18 a week. Are you worth this $18? If not, you should first fill and then outgrow your present position. It does not mean trying one position after another. Being progressive means to accomplish today more work and better work than yesterday. That is why some men are paid $100 and $150 a week, and are worth it. Watch the big executive as he sits at his desk. No fretting, fuming, or hurrying; but see the rapidity with which he dispatches one task after another. You can learn to work that way, and you may perhaps even fit yourself to hold a position like this.

You should prepare yourself to do something that the world needs so seriously that it will pay good wages for it. Learn to do this thing well, even if its beginning is sweeping out an office and making yourself generally useful. Does the great world need such humble work as this? We all know that such work is vitally necessary. The boy or girl who places a weight on the papers near the window, throws a cover over the typewriter which the stenographer has left,

supplies the telephone callers with the information that though the employer is now out to lunch, he may be expected back by 1.30, turns off the dictaphone which someone has left running, and sees that things are left in proper order at night,—this employee, by doing just such things, aids a large concern to do business and makes his efforts of great value to his employers. There is no need to wait for some big job before you recognize the call to labor. Take hold, and even though you may be obliged to begin in a humble capacity, you are not obliged to remain there.

You may decide sooner than your employer that your efforts entitle you to a better position. What is to be done in such a case? Great business men often advise employees, "Never ask for an increase in salary," and our grandmothers likewise taught us, "Modesty secures its own reward." But let us do our own thinking here. While some employers look over their pay rolls every fortnight searching for someone to promote, and are ready to give the salary increase whenever it is deserved, other employers would sooner have a tooth pulled than mention promotion and are to be reached only by a definite request. For which class do you work?

Before asking for an increase put this question to yourself, Am I worth it? Do not claim that more salary is due because you have been there a long while. Bring forward some definite reasons. If you have none, go back and develop some. Are you a salesman? What do your sales records show? Are you a buyer? How much did you save the company on that big deal you put through? Are you an accurate and speedy worker? How few mistakes have you made compared with the usual worker? How many average persons were formerly required to fill the place you now occupy? If you can convince yourself thoroughly and honestly, then you are ready to have a talk with the employer. You will not feel right until you put the matter before him in a frank, good-humored, but serious way. Be persistent if you feel fully justified, and do not be put off with future promises.

The chances are that your interests will not be hurt in the least, and that if your employer has not noticed your good efforts, he will now begin to do so; and thus you and he will enter into a closer partnership for more work and better wages. Choose the kind of employer and the kind of work where such a course is possible.

Keep enthusiastic: advancement belongs to the optimist. The road to success is by no means easy to travel. Hard, persistent effort alone will conquer. "I have been employed for a number of years in railroad work," writes a railway manager, "and for a great many of them in a very minor position, which at times became rather irksome, and whose duties were somewhat unpleasant,—so much so that it was with difficulty that I stayed where I was." Read between the lines of this letter. Is it not inspiring to find a man who has reached the top after years of disagreeable work?

You will meet discouragement and occasionally will receive some hard knocks. This need not alarm you, as it is to be expected. If men could advance without effort, would not the beggar be a manufacturer and every small politician the president of the United States? Demonstrate your right to a high position by the way you treat obstacles. When discouragement comes, smile. Fall in love with your daily work. It has some drawbacks, of course, but perfect positions are not to be found. Do not have your hopes so fastened on an impossible position that life becomes sour. If you make the best of a small position, it is better than making a failure of a bigger one.

"Let a young man be thoroughly fitted for the business position he occupies," says Edward Bok, author and formerly magazine editor, "alert to every opportunity, and embracing it to its fullest possibility, with his methods fixed on honorable principles, and he is a successful man. It does not matter whether he makes a thousand dollars or a hundred thousand dollars. He makes a success of his particular position. He carries to a successful termination that which it

has been given him to do, be that great or small. If the work he does, and does well, is up to the limit of his ability, he is a success. If he does not work up to his capacity, then he fails, just as he fails, too, if he attempts to go beyond his mental or physical limit. Success is simply doing anything to the utmost of one's ability—making as much of one's position as it is possible to make."

Grow continually; be no mere job-holder, but a broad human being. 1. *Grow in intelligence.* No matter from what college you were graduated, no matter if you can write after your name several degrees, you are always to be a student. In life's school the final marks are never handed in. Society is ever in process. Nothing is done as it used to be. Civilized man has forsaken the savage practices of half a million years ago, and the men of a century hence will refuse to follow what they will term the "barbarisms" of today. Your work ten years from now will not be done as it is today, and if you do not improve, somebody else will be given your place.

2. *Add new experiences at every turn.* This is the cure for the "old fogyism" which begins to creep upon a man even in the twenties. Do not condemn a thing simply because it is new. Be receptive. "If you read books only about things you already know, talk only about things you have already talked about before, meet only people whose uttermost thought you have sounded long ago, your mind becomes caked, incapable of action, quite useless." Refuse to let your mind stand still or become set. If your position means nothing but an enervating grind, get into another one. You cannot afford at any price to have your mind marred, your life stunted and deadened. Recognize the fact that most of your wage is outside the salary envelope; work where you can grow.

3. *Increase your efficiency daily.* You are not to take for your standard what people in general are doing,—to turn off work in a slipshod manner because others do. They are going to reach only a certain level, and you are not responsible if it is

low. But as for your level, to reach that keep your standard high and put the stamp of your own character on everything you do. This only will fit you for the coveted position toward which you have been aspiring and working for years.

Be adaptable. Whatever your lot in life, do not consider yourself a failure. Many will still have to do the crude work of the world; perhaps you will. It may be that your start in life has not given you the power to think clearly on the work of the world, and you cannot, therefore, expect to plan, but must rather carry out tasks that others have given you to do.

Again, our policy of restricting immigration brings you face to face with a difficult and serious situation. If we are not to admit large numbers of ignorant foreigners to do the rough work of the nation, who will do it? No doubt, you must consider yourself as one who, if it seems best, must be content with this kind of work. There is no real objection to a college graduate's doing the rough work of the world if he will still use his education to good advantage.

In what ways can education be used? Education can clearly be used in three ways: (1) in the improvement of methods of doing work; (2) in the organization of the workers and the raising of their standards of morality and efficiency; (3) in the other activities of life, which are not vocational. Suppose, for example, one has the job of telephone operator. There is no end to the things that may be learned, and to the ways in which one's education may be put to use on the job. The worker, for instance, may set herself to find out about the electrical principles of the switchboard and the telephone. Then there is the geography involved in local and long-distance calls. Next the accounting principles may be studied, as well as the administrative organization of the telephone company. Coming closer to the job itself, the operator may study how she is being taught, trying to find out why the supervisor or teacher uses the particular regulations and methods which she does. Again, the operator may contribute to the dignity of her work by

assisting in the coöperative study of its problems and by the bettering of the organization of the workers. Workers have far to go in making their organizations intelligent, and every worker should help. Finally, she may at all times consider the other activities listed in our diagram on page 2, and by availing herself of a scheme whereby we reward her with rest periods, vacations, and in some cases shorter hours than some other people work, she may use her leisure time for civic, religious, and other forms of service.

The elevator girl, street-sweeper, doorkeeper, railway guard, traffic officer, and all the rest have such opportunities open to them. They need only to wake up and use them. If you are destined to work in a factory where you merely feed a machine or assemble parts, or merely repeat one little process over and over again all day long, you can at least use your mind in the ways described above.

Be coöperative. Remember that we all should go up together in America. Join your occupational organization, be it bankers' or manufacturers' club, union, or association. If this organization is not satisfactory, help to make it better, and stand against the majority whenever necessary for the sake of principles. In time of great excitement you may not be able to act against the majority, but you can at least vote against it, remembering that to lose a fight honorably is a gain. Try to put down the spirit which merely follows the leader. Help to break the power of the union leader who says, "Boys, this is a complicated matter; you leave it to me and I will put it across." Demand the facts and disseminate them among the other members. Substitute thinking for shouting, and investigation for enthusiasm. Through it all recognize that it is ignorance rather than selfishness which holds people back. If they can be shown, they are more likely than not to decide for the right. In such tasks you will need infinite patience and tact, and you cannot always say all you think. But your motto should be expressed in one word, "Coöperate."

Never stop studying. There are references enough in this book to keep you reading for a number of years. In succeeding pages we have listed a number of trade magazines, and these will give you an idea of another important source of occupational enlightenment. Every progressive worker takes and studies his trade paper, professional magazine, or union journal. Your teachers belong to the National Education Association and read its *Journal*. Most workers learn far more after leaving school than the school itself can possibly give them. But the basis of all their efficiency comes from the habits of study and knowledge acquired in school.

Study your present job. Success in today's job, be it school, errand-boy work, or what not, is your best guarantee for success in the future. Our message to you is to remember that there are no short cuts, and that enlightenment and righteousness are the only way. Whatever your present task is, therefore, study it and put into it your intelligence and good will. Out of this you will develop power for the tasks ahead. You are still a high-school student. Prepare well your lesson for today; for out of today's success you build your career.

EXERCISES AND PROBLEMS

1. How can a person prepare to be promoted?

2. Should a person definitely ask for a promotion? Explain why he should or should not, and how it should be done or how the promotion may be secured otherwise.

3. If you were working in a paint store and had three hours' time each evening, six days a week, what would you do with that time? Do not outline a plan you could not follow out.

4. Find out something about the life career of some well-known person in your vicinity. Tell the class about his experiences.

5. Describe an actual situation—such as a position in a bank, store, factory, mine, or farm—and show how a person can study his job in order to secure a promotion.

6. A boy left a position because he was asked to sweep off a sidewalk. He maintained that he had not been hired for that purpose. What do you think of his decision?

7. Explain how by studying costs as explained in Chapter XXII you will be better able to secure a promotion.

8. Can you investigate a commercial or industrial establishment and make a ladder showing the promotions from lower positions to higher? Bring this list or diagram and explain it on the blackboard.

9. Give instances showing the need for adaptability. How will this help a person to be advanced more rapidly?

10. Show how the purpose of advancement is best served by helping other persons.

11. Describe the responsibility which a man has for the welfare of other persons in the establishment, particularly those in lower positions with lower incomes.

12. Are you interested in securing advancement for personal reasons only or for the purpose of serving others more effectively? Explain the difference, with illustrations.

13. Demonstrate one of these problems in an interview before the class.

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WARREN, WALDO P. Thoughts on Business. Forbes & Company, 1919.

Most of the books on vocations discuss the question of progress and readjustment.

A LIST OF REFERENCES ON OCCUPATIONS

I. A guidebook giving several references on each occupation:

ALLEN, FREDERICK J. A Guide to the Study of Occupations. Harvard University Press, 1925. This book is arranged in the order of the census list, and contains in sections I to IX a list of references on each of two or three hundred occupations. In section X are a criticism of these books and a list of occupational magazines.

II. Books each describing a number of occupations:

NOTE. Use the indexes and tables of contents to find the special occupations you are looking for. The dates will suggest the recency of the material, though some of the older books have stood the test of time and are still very good.

ADAMS, ELIZABETH K. Women Professional Workers. The Macmillan Company, 1921.

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III. **Other references:**

Detailed census reports may be found in any large library. Summarized figures are found in the Statistical Abstract, which may be obtained from the Government Printing Office at Washington, and in the "World Almanac" at any bookstore. State departments of labor and the Bureau of Labor Statistics, the Children's Bureau, the Department of Commerce, the Women's Bureau, the Department of Agriculture, state agricultural colleges, and many other agencies issue important and interesting material.

IV. **A list of important occupational journals:**

Accessory and Garage Journal. Pawtucket, R. I.
Advance (clothing unions). New York City.
Advertising and Selling. New York City.
American Banker. New York City.
American Blacksmith and Motor Service Shop. Buffalo, N.Y.
American Builder. Chicago, Ill.
American Cloak and Suit Review. New York City.
American Federationist (unions). Washington, D.C.
American Fruit Grower Magazine. Chicago, Ill.
American Lumberman. Chicago, Ill.
American Machinist. New York City.
American Motorist. Washington, D.C.
American Wool and Cotton Reporter. Boston, Mass.
Architectural Record. New York City.
Army and Navy Magazine. Washington, D.C.
Automobile Dealer and Repairer. Cooperstown, N.Y.
Bakers' Helper. Chicago, Ill.
Boot and Shoe Recorder. Boston, Mass.

Bricklayers and Masons Journal. New York City.
Building Age. New York City.
Carpenter. Indianapolis.
Country Gentleman (agriculture). Philadelphia, Pa.
Dry Goods Economist. New York City.
Electrician and Mechanic. Boston, Mass.
Engineering Magazine. New York City.
Engineering and Mining Journal. New York City.
Engineering World. Chicago, Ill.
Factory. Chicago, Ill.
Federationist (unions). Cleveland, Ohio.
Hardware Age. New York City.
Harvard Business Review. Cambridge, Mass.
Harvard Law Review. Cambridge, Mass.
Highway Engineer and Contractor. Chicago, Ill.
Hotel Management. New York City.
Industrial and Engineering Chemistry. New York City.
Industrial Management. New York City.
Iron Age. New York City.
Journal of Accountancy. New York City.
Journal of the American Dental Association. Chicago, Ill.
Journal of the American Medical Association. Chicago, Ill.
Journal of Education. Boston, Mass.
Journal of Industrial and Engineering Chemistry. New York City.
Journal of the National Education Association. Washington, D.C.
Labor (railway unions). Washington, D.C.
Landscape Architecture. Brookline, Mass.
Management Engineering. New York City.
Medical World. Philadelphia, Pa.
Men's Wear. Chicago, Ill.
Metalworker, Plumber, and Steamfitter. New York City.
Mining and Oil Bulletin. Los Angeles, Calif.
Monthly Labor Review. U. S. Bureau of Labor Statistics, Washington, D.C.
Motor Age. Chicago, Ill.
Motor Truck. Pawtucket, R.I.
National Builder. Chicago, Ill.
Nation's Business. Chamber of Commerce of the United States of America, Washington, D.C.

New England Fisheries. Boston, Mass.
Printers' Ink. New York City.
Professional Engineer. Chicago, Ill.
Public Service Magazine. Washington, D.C.
Railroad Trainman. Cleveland, Ohio.
Railway Age. New York City.
School Review. Chicago, Ill.
School and Society. New York City.
Shoe and Leather Reporter. Boston, Mass.
Survey (social work). New York City.
System (business). Chicago, Ill.
Trained Nurse and Hospital Review. New York City.
United Mine Workers Journal. Indianapolis, Ind.
Women's Wear. New York City.
Wood Worker. Indianapolis, Ind.
Yale Law Journal. New Haven, Conn.

V. **References on vocational guidance, for teachers:**

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BLOOMFIELD, DANIEL. Labor Maintenance. Ronald Press Company, 1920.

BLOOMFIELD, MEYER. Youth, School, and Vocation. Houghton Mifflin Company, 1915.

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A Scale for Measuring the Progress in your Vocational Guidance

In Chapters VII and VIII we have shown that one can discover his abilities only by experience and study, and can make vocational decisions only on the basis of self-discovery, testing, and careful planning. Some of the necessary experiences, knowledge, and plans are listed below, with spaces in which to mark your progress to date, whether *poor*, *fair*, or *good*. This table will reveal to you the weak and strong points in your preparation for taking the next steps, whenever these steps are required. You may copy these items and columns in your notebook.

	Poor	Fair	Good
1. Experience in doing sample tasks like those of the farmer			
2. Experience in industrial work, as assembling, machine tending, machine operating, tool work, in several materials and processes			
3. Experience in household tasks			
4. Experience in commercial processes			
5. Coöperative activities which develop qualities of character useful in all vocations, and especially necessary in the professions			
6. Study of the characteristics of agricultural callings			
7. Study of industrial callings			
8. Study of commercial callings			
9. Study of professional callings			
10. Ability to obtain facts about occupations			
11. Knowledge of how to study occupations			
12. Knowledge of the various educational opportunities available			
13. Knowledge of the general economic and sociological problems of occupational life			
14. Knowing the meaning of work, money, and thrift			
15. Selection of three or more callings for special consideration and study			
16. Formulation of definite tentative plans for educational and occupational progress			

Three scales for measuring the above abilities more comprehensively may be obtained from the Bureau of Vocational Guidance, Harvard University. Sample set, ten cents, postpaid.

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